

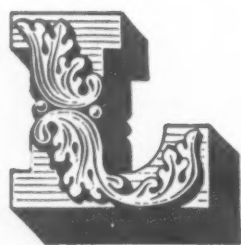
AMERICAN ARTISAN

DECEMBER
1942



RESIDENTIAL AIR CONDITIONING
ARM AIR HEATING • SHEET METAL CONTRACTING

ESTABLISHED
1 8 8 0



et Us Resolve

"I am only one, but I am one. I cannot do much, but I can do something. What I can do I ought to do, and what I ought to do—with God's help I WILL do."

EDWARD EVERETT HALE

All of us are in this war. With each and every one of us contributing to the aggregate, every ounce of effort, every pound of energy—and investing in WAR BONDS to pay for its cost—we'll win the ultimate Victory.

Let us resolve to increase the tempo of our efforts—to speed up our production—in order to accomplish the speediest Victory possible. Until then, Keep Buying War Bonds—more War Bonds—MORE WAR BONDS—and Keep Working—KEEP FIGHTING. We are!

This would be a good New Year's resolution, but it mustn't wait for the new year. It must be done TODAY!

To All of Our Customers and Friends
We Extend a Warm Handshake—Our
Most Sincere "SEASON'S GREETINGS."



LAMNECK PRODUCTS INC. Middletown, Ohio

Simplified Furnace Pipe and Fittings and Prefabricated Duct and Fittings for all Types of Residential Gravity and Forced Warm Air Heating and Air Conditioning Systems.

REGISTERS for all types of WARTIME CONSTRUCTION

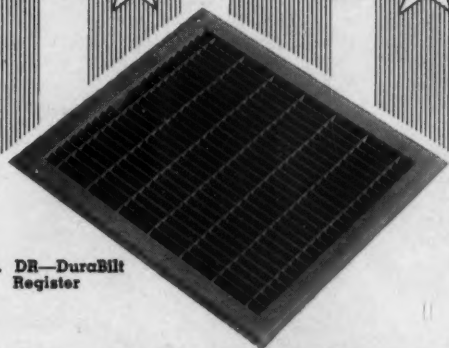


Fig. DR—DuraBilt Register



No. 800—Heat-Rite Register

Construction for wartime purposes, either for the use of our armed services or for industrial workers, often calls for heating systems stripped down to the bare essentials. For such requirements, necessitating economy in both materials and cost, Auer offers several register models which are simple, yet durable and efficient.

The Airo-Flex "7000" register illustrated above is very practical for small homes and many types of group buildings. It has a single shut-off louvre and modern design grille with fins which can be adjusted with turning tool upward, level, or downward, for air flow as desired.

The complete Auer line includes numerous designs in modern, inexpensive registers and intakes which are suitable for low-cost jobs, and conversion and remodeling purposes. For heavier construction, and where air conditioning is permitted, Auer also offers all types of multi-louvre air directional registers.

Write for complete Auer Register Book—
or for Catalog "G" on flat metal grilles.

THE AUER REGISTER CO., CLEVELAND, OHIO

AUER REGISTERS

& GRILLES · For Air Conditioning *and* Gravity

AMERICAN ARTISAN

Covering All Activities in Residential Air Conditioning and Small Commercial Cooling, Warm Air Heating, Sheet Metal Contracting and Fabricating

WITH WHICH ARE MERGED

**FURNACES
SHEET METALS**

AND

**Warm-Air
Heating**

J. D. Wilder, Editor

A. A. Kennedy, Assistant Editor

Vol. 111, No. 12 December, 1942 Founded 1880

CONTENTS

We Stand Hopefully at the Crossroads.....	19
War Housing for 1943.....	20
Interpretations, Easements, Amendments.....	22
Official Ruling on Gutters and Downspouts.....	23
You Can Borrow on Frozen Gas Furnace Stocks.....	24
On Our Industry's Front.....	26
The New Controlled Materials Plan.....	40
The Wage "Freeze" Order.....	41
M-126 Amended Stops Production of More Items.....	43
Index of Editorial Articles in 1942.....	56
New Products	62
New Literature	65
With The Manufacturers.....	67
War Time Trade News.....	82

THE RESIDENTIAL AIR CONDITIONING SECTION

Fuel Conservation Program Facts and Helps.....	29
War Housing Construction Standards.....	35
The Uniduct System (Defense House Heating).....	36
65 Degrees Can Be Comfortable—If.....	38

THE SHEET METAL SECTION

War Work for Small Sheet Metal Plants.....	47
Plane Air Cooler Boxes and Ducts.....	48
Production of a Diesel Engine Manifold.....	50

In This Issue

THERE are five articles in this issue which we believe are important as 1942 comes to a close.

First, for those who hope to get new house furnace heating, the article on page 20 by Arnold Kruckman surveys the government's plans for new war worker housing in 1943. There may be some detached dwellings, but it looks as though the dormitory, the row house, portables, multi-family buildings are right now finding the most advocates among the planners.

Mr. Kruckman also describes government's hopes for thousands of conversions of large old homes into multi-apartments. Just how much heating will be required, is difficult to say, now, but our past experience indicates that one old gravity furnace in an old house is pretty hard to reconstruct to heat several apartments. Especially, where new living rooms are to be built on second floors where formerly bedrooms were under-heated. Maybe there's going to be a large field for readers in this activity.

If you have frozen stocks of gas furnaces and have money tied up in such inventory, the article on page 24 should be timely. You can now borrow on these furnaces and perhaps sell the furnaces through RFC help.

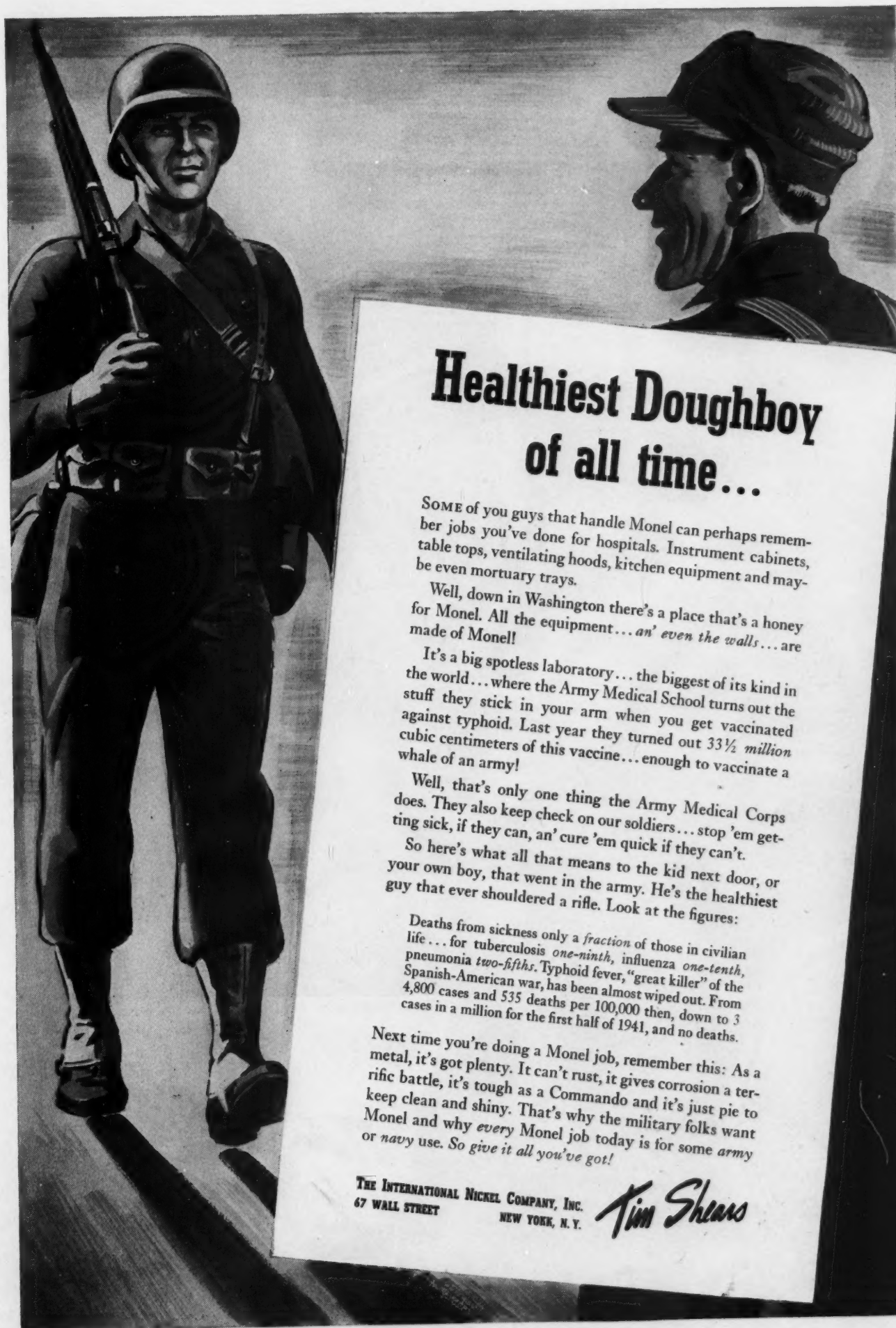
The wage "freeze" order on page 41 explains how wages are frozen and what you must do to cut your mechanics' wages and the salaries of your office help. And much the same procedure must be followed if you want to raise your wages or salaries. You should have the complete information—get literature from your local offices or write us for addresses.

And now, after months of argument, a ruling has been made on gutters and downspouts—where you can install; how much you can install; whether or not you can manufacture—and buy.

Member of Audit Bureau of Circulations—Member Associated Business Papers, Inc.

Published monthly by Keeney Publishing Company, 6 N. Michigan Ave., Chicago, Ill., U. S. A. Copyright 1942 by Keeney Publishing Company. Publisher—Frank P. Keeney; Manager—Chas. E. Price. Advertising staff: Wallace J. Osborn, New York City, Telephone—Murray Hill 9-8293; J. D. Thomas, Chicago, Telephone—State 6916; Robert A. Jack, Cleveland, Telephone—Yellowstone 1540; J. H. Tinkham, Los Angeles, Telephone—Richmond 6191.

Yearly Subscription Price—U. S. and possessions, Canada, Mexico, South America, Central America, \$2.00; Foreign, \$4.00. Single copies, U. S. and possessions, \$.25. Back numbers, \$.50. January, 1942, Directory issue, \$1.00 per copy. Entered as second-class matter, July 29, 1932, at the post office at Chicago, Illinois, under the act of March 3, 1879.



Healthiest Doughboy of all time...

SOME of you guys that handle Monel can perhaps remember jobs you've done for hospitals. Instrument cabinets, table tops, ventilating hoods, kitchen equipment and maybe even mortuary trays.

Well, down in Washington there's a place that's a honey for Monel. All the equipment... *an' even the walls...* are made of Monel!

It's a big spotless laboratory... the biggest of its kind in the world... where the Army Medical School turns out the stuff they stick in your arm when you get vaccinated against typhoid. Last year they turned out 33½ million cubic centimeters of this vaccine... enough to vaccinate a whale of an army!

Well, that's only one thing the Army Medical Corps does. They also keep check on our soldiers... stop 'em getting sick, if they can, an' cure 'em quick if they can't.

So here's what all that means to the kid next door, or your own boy, that went in the army. He's the healthiest guy that ever shouldered a rifle. Look at the figures:

Deaths from sickness only a *fraction* of those in civilian life... for tuberculosis *one-ninth*, influenza *one-tenth*, pneumonia *two-fifths*. Typhoid fever, "great killer" of the Spanish-American war, has been almost wiped out. From 4,800 cases and 535 deaths per 100,000 then, down to 3 cases in a million for the first half of 1941, and no deaths.

Next time you're doing a Monel job, remember this: As a metal, it's got plenty. It can't rust, it gives corrosion a terrific battle, it's tough as a Commando and it's just pie to keep clean and shiny. That's why the military folks want Monel and why *every* Monel job today is for some army or navy use. So give it all you've got!

THE INTERNATIONAL NICKEL COMPANY, INC.
67 WALL STREET
NEW YORK, N. Y.

Tim Shears



Twin Contact Controls



IN THE YEAR THAT COUNTS **DOUBLE**

Twin Contact Controls

MAINTAIN THEIR RECORD



For the fifth consecutive year, dealers and service men are finding Twin Contact Controls remarkably free from service troubles. And this year — 1942 — that record means far more than ever before.

Every control that has to be repaired or replaced requires vital material, precious man-hours — and America needs both for a different purpose just now. Continuous, dependable service from every heating plant now operating is essential to our war effort. Under these conditions, the fact that Twin Contact Controls stay on the job with little or no attention becomes doubly important.

When the automatic heating industry can resume its normal activities, it will pay you to remember that Father Time has measured Twin Contact Controls, year by year, and found in them full value of dependability and trouble-free service.

PERFEX CORPORATION

Milwaukee, Wisconsin



Twin Contact Controls



IN THE YEAR THAT COUNTS

DOUBLE

Twin Contact Controls

MAINTAIN THEIR RECORD



For the fifth consecutive year, dealers and service men are finding Twin Contact Controls remarkably free from service troubles. And this year — 1942 — that record means far more than ever before.

Every control that has to be repaired or replaced requires vital material, precious man-hours — and America needs both for a different purpose just now. Continuous, dependable service from every heating plant now operating is essential to our war effort. Under these conditions, the fact that Twin Contact Controls stay on the job with little or no attention becomes doubly important.

When the automatic heating industry can resume its normal activities, it will pay you to remember that Father Time has measured Twin Contact Controls, year by year, and found in them full value of dependability and trouble-free service.

PERFEX CORPORATION

Milwaukee, Wisconsin



Twin Contact Controls



IN THE YEAR THAT COUNTS **DOUBLE**

Twin Contact Controls

MAINTAIN THEIR RECORD



For the fifth consecutive year, dealers and service men are finding Twin Contact Controls remarkably free from service troubles. And this year — 1942 — that record means far more than ever before.

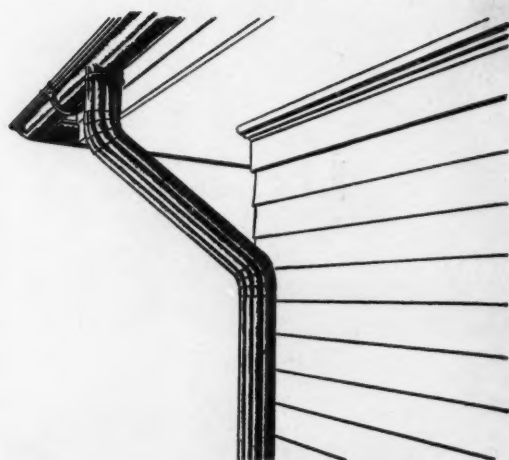
Every control that has to be repaired or replaced requires vital material, precious man-hours — and America needs both for a different purpose just now. Continuous, dependable service from every heating plant now operating is essential to our war effort. Under these conditions, the fact that Twin Contact Controls stay on the job with little or no attention becomes doubly important.

When the automatic heating industry can resume its normal activities, it will pay you to remember that Father Time has measured Twin Contact Controls, year by year, and found in them full value of dependability and trouble-free service.

PERFEX CORPORATION

Milwaukee, Wisconsin

THE COPPER THAT MIGHT
HAVE BEEN USED FOR
THIS SHEET METAL WORK



Instead— Makes huge COPPER TUBES for vital new ships



OUR COUNTRY'S war needs require all the copper that would otherwise go into regular peacetime uses . . . such as sheet metal work on residences and commercial buildings.

Typical of the applications for which copper is vitally needed is this large copper duct fabricated from sheet for use on a new cargo ship. Copper equipment of

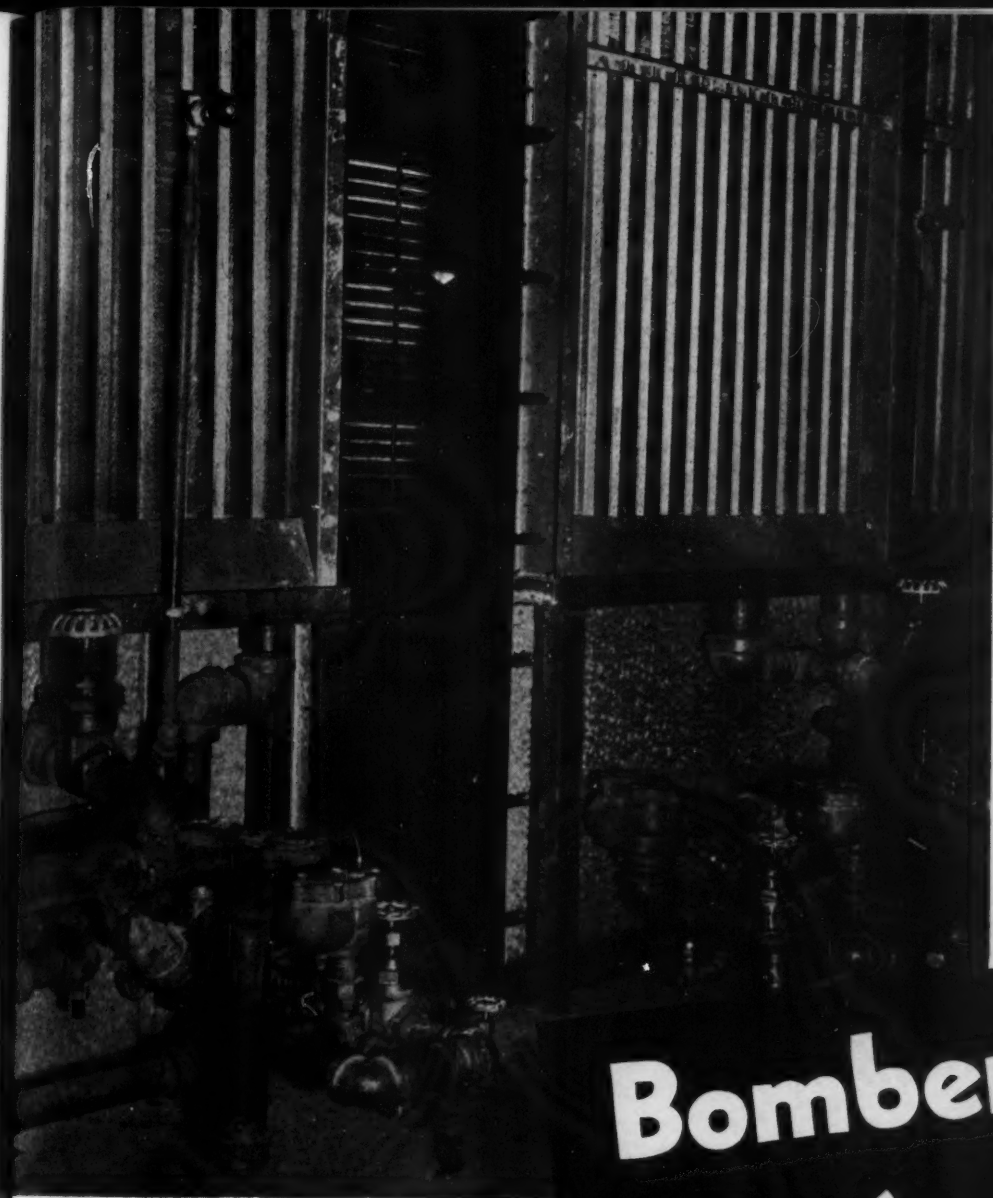
many kinds is needed in shipbuilding, as well as in our essential chemical industries.

The time-honored properties of copper with which the sheet metal trade has so long been familiar—rust-immunity, corrosion-resistance, heat conductivity . . . and easy fabrication . . . these are some of the reasons why copper finds such great demand in our war program.



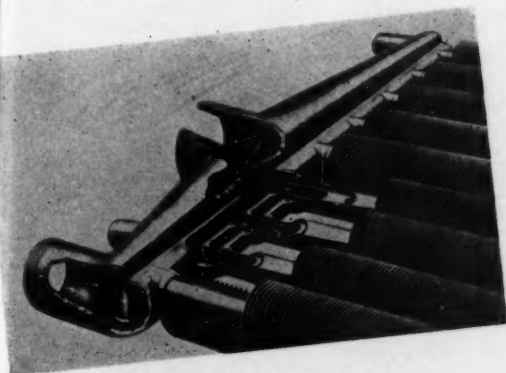
Anaconda Copper

THE AMERICAN BRASS COMPANY • General Offices: Waterbury, Connecticut
Subsidiary of Anaconda Copper Mining Company • In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ontario



Above: Aerofin Nonfreeze Coils in one of the main fan rooms of the Manufacturing Building of a large midwestern bomber plant.

Below: Cutaway view, showing features of Aerofin construction.



Bomber Plants Can't Afford Freeze-Ups!

These Aerofin Nonfreeze Coils are installed in one of the main fan rooms of a large midwestern bomber plant, and there they guard against freeze-ups that might halt production of fighting planes. With these coils, complete steam modulation from zero up to full capacity can be attained and uniform heating is assured at every point. If your heating installation must give constant, uninterrupted performance, specify this new heating surface. No untried product, Aerofin Nonfreeze Coils are backed by the same guarantee given to all Aerofin products. Our nearest office can give you complete details.

AEROFIN CORPORATION

410 S. GEDDES ST., SYRACUSE, N. Y.

Chicago

Detroit

New York

Philadelphia

Dallas

Cleveland

Toronto

Service

IS YOUR BRIDGE TO FUTURE PROFIT



All you ever heard or read about the importance of service, goes double now!

Service is not only important—it's a vital necessity. And not for the heating industry only—for *all* industry—for *the whole nation!*

In the heating industry we've got a special job to do—the job of conserving... protecting what we have. We've got to save existing equipment...make it do...and see that it serves efficiently and economically—to protect health and morale—to *save fuel!*

There's no time to dream now about the post-war world. But you can do a little hard thinking. And it doesn't take much imagina-

tion to picture the market—the pent-up demand—that will exist then.

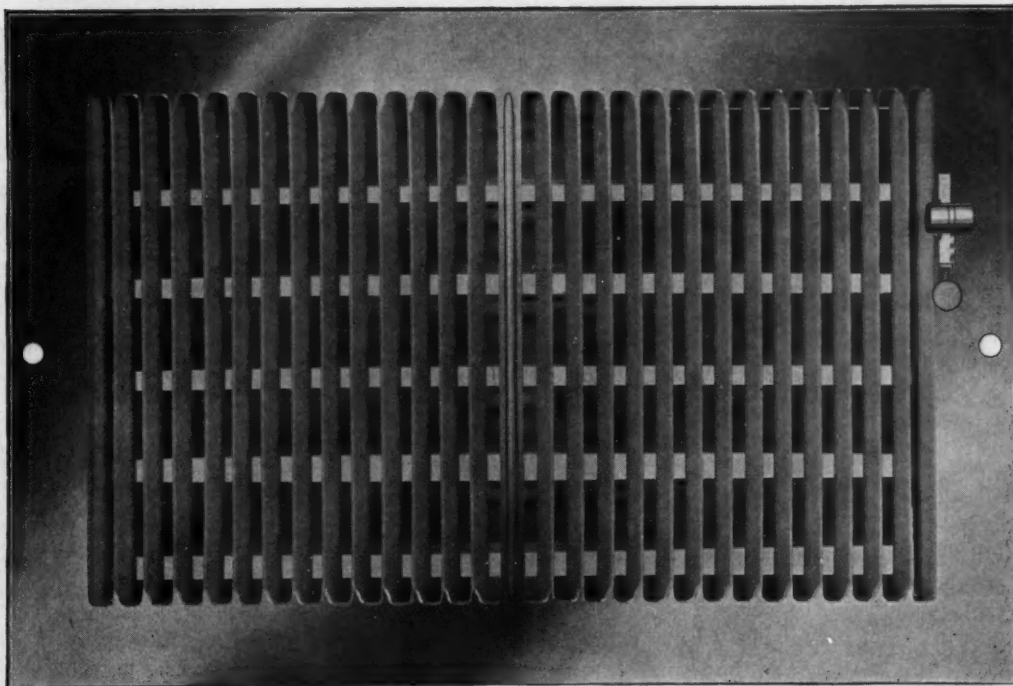
Service is your bridge to that market—those future profits. It's a worth-while job right now—it will pay off richly when the war is won.

Penn offers you full co-operation in keeping existing heating plants functioning efficiently. Like all items of equipment, automatic controls must be skilfully and thriftily serviced. Under established priority rules Penn is prepared to furnish new controls to replace those which cannot be made to function efficiently. *Penn Electric Switch Co., Goshen, Ind.*



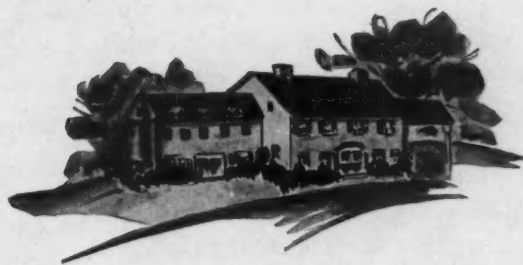
REFRIGERATION AIR CONDITIONING, ENGINE,

HEATING, PUMPING AND AIR COMPRESSOR



***Priced for The War Workers'
Housing Development***

***Good Looking Enough for
the Mansion on the Hill***



THE PLIAVANE REGISTER

Here is a register which is surprisingly low in cost but which is good looking enough for installation anywhere. Most important is its complete flexibility. The air stream can be directed upward or downward and, at the same time, sideways. The face vanes are individually adjusted for horizontal deflection while the back blades which are adjusted from the face of the register direct the stream vertically. Also available in the single valve construction where sideways deflection is not necessary. Write for catalog.



The back blades of the register can be set in any desired position by adjusting the regulator on the face of the register.



TUTTLE & BAILEY, Inc.

NEW BRITAIN, CONN.

CHICAGO

PHILADELPHIA

HOUSTON

If anyone can

YOUR REPUBLIC SHEET DISTRIBUTOR CAN

It's seldom a "snap" for him to solve sheet supply problems these days. But he frequently finds the answer—though it may take hours of studying customers needs, juggling his stocks and utilizing his broad knowledge and experience.

For with wartime production calling for more tanks, ships, trucks and other items which require huge tonnages of flat-rolled steel, he may not be able to deliver all the sheets—Republic Steel, U-Loy* Copper-Bearing Steel, Enduro* Stainless Steel, Toncan* Iron, Taylor Roofing Ternes—that you need—much as he wants to. His stocks are not as complete as he'd like. Mill shipments may be slower. But time and again, he has been able to come through to relieve supply problems.

The answer may be right in his stock—a few sheets for a small rush job, larger supplies for war projects, or another

grade or size that will do nearly as well. If they aren't there, he'll do his best to get them for you.

He knows fabricating methods that may help you. He has valuable literature on working and welding Enduro Stainless Steel that you can use. He often succeeds in helping you, because he's on the job.

Call your Republic Distributor *first*. Tell him what you need, and how you intend to use the material. Give him all the facts concerning the job—including the priority rating—for this information is absolutely necessary in order to give you the best possible service today. Republic Steel Corporation, Alloy Steel Division, Massillon, Ohio—General Offices, Cleveland, Ohio.



REPUBLIC *Enduro*

n lick *your* problem



STAINLESS STEEL



Keep 'em Rolling!

A·R·A SHEETS

Are Workable

A pleasant surprise awaits you who for the first time fabricate A.R.A. sheets.

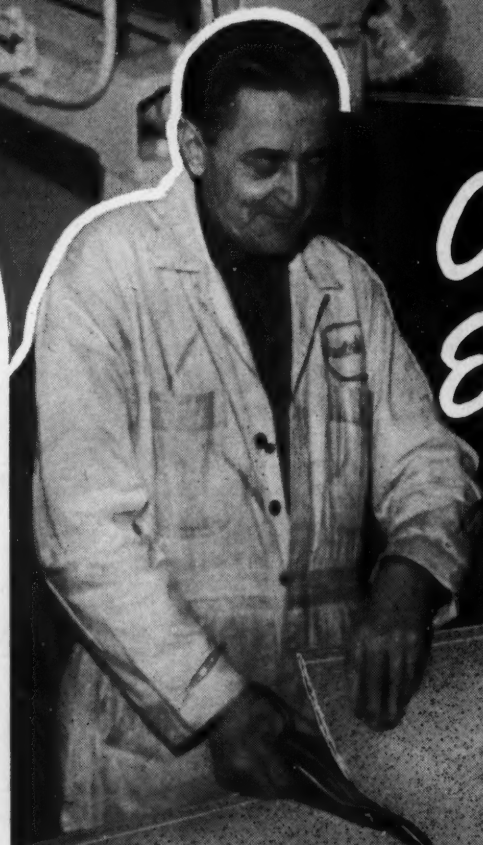
You quickly find out A.R.A. sheets roll up satisfactorily and easily on your own rollers into strong, smooth, round pipe. A lap or a standard metal seam can be used for the long joint and a sleeve of A.R.A. Sheets or metal can be used for the butt joint.

You find you can cut A.R.A. sheets easily with a pair of snips giving a clean, smooth, precise and definite edge—A.R.A. sheets also bend accurately to right angles in your brake. You soon learn the reason for the preference and popularity given A.R.A. sheets by the trade.

You discover for yourself A.R.A. sheets mean successful fabrication.

Asbestos clad A.R.A. sheets are tough yet flexible (Mullen tested over 200 lbs. per sq. in.)—rigid but not brittle—fire-proofed and water-proofed—are light in weight, will not dry out, crack, crumble, or chip, have a high insulating value (K, 45 B. T. U.) and good sound-deadening properties. They are easy to handle, will bend without breaking and can be rolled, punched, scored and die cut, still retaining their rigidity and strength.

Get genuine A.R.A. sheets from your jobber.



Cuts Easily

4101 WEST
TAYLOR ST.

GRANT WILSON, INC.

CHICAGO
ILLINOIS

FAST FIGHTER



TOE-TO-TOE slugging isn't for destroyers. They move in fast, like a lightweight boxer, slam home the depth charges or torpedoes, and speed off.

Speed is the thing. That's why modern destroyers must be stripped of every pound of excess weight—and why lightweight sheet steel is used wherever possible, instead of heavier plates. Sheets are found in a lot of places on board the modern destroyer.

From the light-gage, zinc-coated ventilating ducts to the heavier bulkheads, torpedo tubes, and deck structure, Bethlehem Sheet Steel is out there on the Seven Seas with the U. S. Navy, in destroyers, in P.T. boats, and in heavier fighting ships. In cargo vessels, too.

In fact, in every phase of the war—in mechanized equipment for the Army, in submarine net buoys, in ductwork and roofing in hangars and war factories—Bethlehem Steel Sheets are at work, giving the same good service as in their former peace-time applications.

**BETHLEHEM
STEEL SHEETS**



BETHLEHEM STEEL COMPANY

AMERICAN ARTISAN

WARM AIR HEATING • AIR CONDITIONING
SHEET METAL CONTRACTING

ESTABLISHED
1880

JANUARY
1943
DIRECTORY
NUMBER

NEXT MONTH...

AMERICAN ARTISAN presents to the industry its 11th successive Annual January Directory Number of warm air heating, air conditioning and sheet metal products.

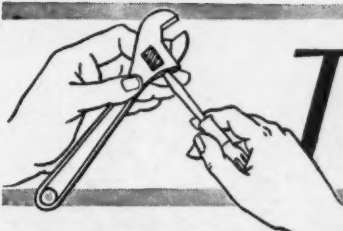
Complete, authentic and checked up-to-the-minute, this directory reaching all the key jobbers, dealers and contractors in the industry is indeed the "spot" to begin your 1943 advertising. The outstanding editorial matter in this issue, dealing with the industry's war-time problems, and suggesting many business-getting ideas, make it a greater-than-ever value.

Read, kept and referred to throughout the year, this Annual January Directory Number of AMERICAN ARTISAN, with all advertisers prominently "spotted" in the Directory Section is the ideal place to keep your name and trade-marks before the eyes of present, as well as future, buyers for the duration.

Use full space . . . catalogue your lines . . . for with space selling at regular issue prices . . . NO ADVANCE IN PRICE . . . it offers you the advertising "Buy" of the year. To assure best possible position,

Send in Your Space Reservation Now!

AMERICAN ARTISAN
6 NORTH MICHIGAN AVENUE CHICAGO, ILLINOIS



TOOL NOTES

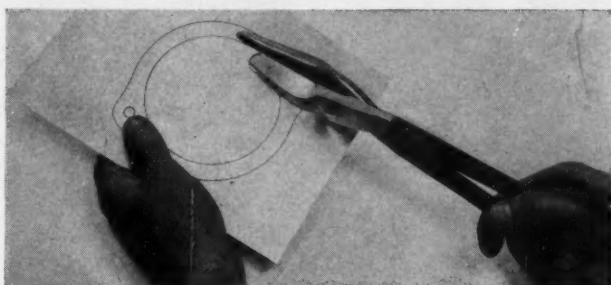
Maintenance
and Repair
Suggestions to
Prolong Tool Life

No. 7 NOTES ON USE AND CARE OF CRESCENT SNIPS

Crescent Snips are made in the four styles illustrated below. The *Standard Pattern* is the most generally used type and is designed for cutting straight lines or circles of fairly

large radius. Available in 8 sizes, from 7 to 14" overall length. The *Combination Pattern*, designed after conventional "circular cutting" types, will cut curves as well as straight lines. Made in one size only with an overall length of 12-3/4". The *Heavy Duty Pattern* is a rugged, powerful leverage snip for heavy work. It will cut curves as well as straight lines. One size, 16-1/2" overall length. The *Circular Cutting Pattern* is designed especially for scroll work and intricate patterns. Two sizes, 7" and 12-3/4" overall length.

The terms Right or Left Hand Snips and Right or Left Hand Cut are often confused. A Right Hand Snip has a Left Hand Cut, i. e. it cuts to the operator's left of the top blade, thus enabling a right-handed operator to see the line of cut. The reverse is true of Left Hand Snips. All Crescent Snips are Right Hand Snips.



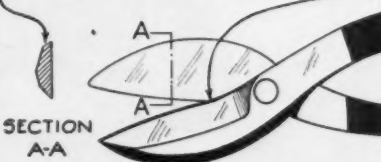
HOW TO USE SNIPS. First mark or scribe the work to accurately locate the line of cut. With the cutting edge of the upper blade directly on the scribed line, begin the cut with the metal well back into the throat of the snips. Stop the cut just before you reach the end of the cutting stroke and repeat the operation by taking another full "bite". If you permit the snip to cut clean through on each stroke, a burred or ragged edge will result and it is more difficult to follow a scribed line. Standard Pattern snips are best for cutting long, straight lines as the flat inside surface of the blade acts as a guide.

When making short cuts of limited length, open the jaws just far enough to permit the desired length of cut. Then cut through with one stroke to the end of the blade. To cut an inside curve, first drill or punch a hole of sufficient size to permit entry of the blade tip. Then gradually spiral out to the scribed line as indicated in the illustration above.

REGROUNDING.

The blade contour of Crescent Snips is the result of considerable research and experiment. It is so designed as to present an efficient shearing angle throughout the full length of the cutting stroke. When regrinding, it is therefore important to maintain the original blade contour. Grind only the bevel edge of the blade and only in an amount necessary to restore a clean, sharp edge.

MAINTAIN THIS PROFILE
GRIND BEVELED EDGE ONLY

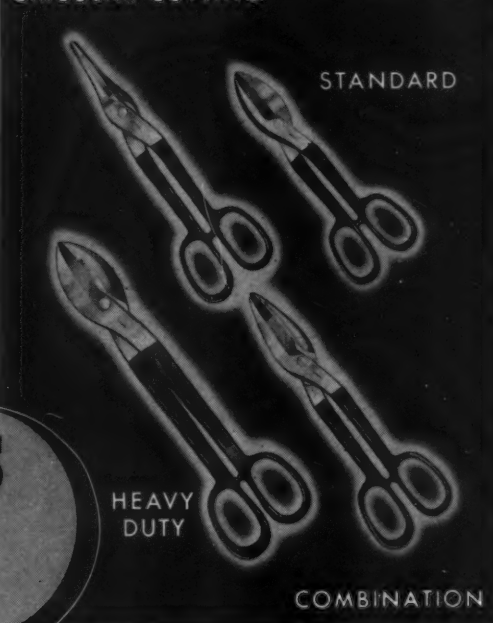


In reassembling the blades, take care not to overtighten the bolt. This caution applies particularly to Crescent U-412 and U-416 snips. Blade tension in all Crescent Snips is attained originally by grinding (not springing) the blades to shape.

COMMON ABUSES. Overloading, by trying to cut stock beyond the capacity of the snip, or forcing the cut by hammering the handles, is poor practice. Cutting wire with snips, likewise, constitutes abuse. This is particularly true with snips having inlaid blades although since Crescent blades are solid forgings and hardened clear through they are less likely to be damaged by this practice. With intelligent use and normal care, Crescent Snips will retain their clean shearing edges for a long time. Keep joint oiled at all times. Prevent rust by occasionally wiping with oiled cloth.

REPAIR PARTS. Bolts and nuts are available for all Crescent Snips. Snip "halves" cannot be supplied as they must be made up in pairs and matched at the factory.

CIRCULAR CUTTING



CRESCENT TOOLS
Give Wings to Work

CRESCENT TOOL COMPANY, JAMESTOWN, N. Y.



A Holiday Salute TO YOU IN *War Time!*

☆ In the stress of these stirring War times we pause to extend our sincere Holiday greetings to our customers and friends. May the usual Holiday joys be transformed by the joy and privilege of serving our country in her War effort. May we all continue to have the strength and courage to do our part, regardless of what that part may demand of us in sacrifice and self denial. May we have the enduring patience through the New Year to await the Victory for our way of life that is sure and—we hope—soon to come.

THE RYBOLT HEATER COMPANY

615 MILLER ST., ASHLAND, OHIO



We Stand Hopefully at the "Crossroads"

AS this issue goes to press, the most encouraging news of the last few months seems to be involved in the rumors that the nation's steel supply will, under the Controlled Materials Plan, become "easier" and that there "may" be a margin left over from critical war needs for essential civilian use.

The basis for this "hope" stems from the announcements that the Controlled Materials Plan will, for the first time, determine accurately just how much material is needed for guns, planes, tanks, and other fighting equipment. Under the plan, producers of parts for our war equipment will produce only the number of parts actually needed for the established quota of war equipment and no more.

There should be, then, no excessive production of parts which, not being immediately needed, placed in unused inventory thousands of tons of raw materials which might better be used for other purposes.

The other part of the Controlled Materials Plan which will also contribute to saner production is the time schedule which will be set up so that the "flow" of required materials month by month will be just sufficient for our needs and no more. This time schedule, in itself, should greatly reduce unused inventories of parts and pieces because under priorities each manufacturer was given a rating based upon need and not upon time of delivery so it was possible for a speedy producer to greatly exceed his time schedule using up materials which might have gone elsewhere.

In view of the prospective importance of the Controlled Materials Plan to our hopes of getting steel in 1943, we suggest that readers study once again Arnold Kruckman's explanation of the plan in the November issue, page 32, and also study the pictorial presentation of the operation of the plan in this issue.

Probably a study of the plan will leave the impression that the whole idea is so basically sound and sensible that it should have been inaugurated months ago. In fact, some such plan should have been the very basis for our schedule of our war materials production. But, as so often happens

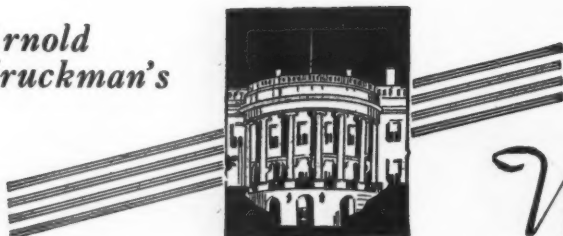
when an unprepared nation engages in a gigantic program of war preparation, our incentive at first was to produce and produce to build our stockpile of equipment. We needed gigantic quantities of almost every war item and the way to get production was to let every producer push his production to the limit.

Now, after a year at active war, we begin to see that some war machines we first thought necessary are not needed. That other machines we sidetracked in the beginning are badly needed. But, meanwhile, we have produced the basic essentials and our need is not now so acute so we can pause a moment and see where we are headed. That's where we stand this December—at a crossroads where we can decide where we go from here.

So the Controlled Materials Plan is not another hasty idea, and its "timing" is not as poor as we might think at first glance. Coming at this time it shows, we think, that this nation can produce on a gigantic scale; that we can start from scratch and catch up with our enemies; that having "eased" our critical need somewhat we have the foresight to pause and see what lies ahead.

The warm air heating-sheet metal industry is in a fortunate position. We are, much more than hundreds of other industries, an "essential" industry. Our citizens must be kept warm. Our homes must be kept in repair. Our industries must be equipped and maintained in production through the services our industry provides. It is unthinkable that our leaders will let workers suffer, our homes go to rack and ruin, our comfort be reduced to an epidemically dangerous level, just for lack of a few thousands of tons of material which we hope will be saved under our new program.

We, in turn, will not be permitted to run hog wild. We, in turn, must gear our usage of material to an overall plan which will provide needed new homes for war workers, keep existing dwellings in repair, provide essential heating system needs. There is, in such an over-all program, every incentive for our industry to do a really patriotic service. If our war planners will set the program this industry, surely, will cooperate.



Washington Letter

War Housing for 1943

OVER one million shelters must be provided for war workers during 1943. You may get a better picture of the war housing Washington thinks is needed throughout the country, by considering what the Manpower Commission has in mind, and what is in the mind of the National Housing Agency.

As you probably know, McNutt's Manpower crowd think upwards of 12,000,000 persons must be working directly and indirectly for the Government making war materials and equipment by the work-peak of 1943. Apparently the National Housing Agency believes a large part of this enormous labor force already is housed or will be able to find its own shelter. National Housing Administrator Blandford has determined that the mean number still to be housed will be not less than 1,600,000 persons. By some alchemy of figures, the administrator has reached the conclusion that 280,000 of this number in some manner will take care of their own shelter, probably by using hotels, furnished rooms, and similar accommodations which may be rented in the major 75 war-work areas. These 280,000 are probably the white-collar executive, administrative and supervisory personnel, who are better able financially and socially to fend for themselves. This obviously leaves 1,320,000 who must be housed. It is the problem of the Government to look after their housing because these workers are limited in what they can pay, and where they may be located in relation to the place where they work.

The Basic Plan

To provide for these 1,320,000 workers the National Housing Agency (whom hereafter we will call the NHA), last Fall worked out this base plan. There are to be built 205,000 new shelters. Congress, under the Lanham Law, supplied \$600,000,000 to pay for this housing. The program, still the basic plan, calls for temporary dormitories to shelter 55,000 single persons in 55,000 single dormitory apartments, at a cost of \$1,200 per room; also 55,000 dormitory apartments for couples to cost \$2,400 per room. To take care of the workers with families, the plan is to build 70,000 temporary homes at a cost of \$3,000 each; and 25,000 permanent homes at a cost of \$4,500 each.

In addition, the WPB bound itself somehow, somewhere, to find the metals and lumber and other materials to enable private builders to construct 90,000 dwellings in war-work areas financed chiefly by loans under the FHA guarantees. Thus simple arithmetic reveals the basic plan is to furnish 295,000 shelters to house war workers. In addition, the \$600,000,000

supplied under Lanham Act also provided \$58,000,000 for the Army to build housing for its civilian workers and personnel at military posts, which includes housing at cantonments, air bases, and any similar military center.

The fuel situation being what it is, and metal a critical material, it is logical that forced warm air heating became the chief method specified to keep most of these dwellings warm. Even the Army, which has a predilection for steam and hot water heating in a large way, gradually more and more specified forced warm air.

Furnace Heating Gets Some "Breaks"

On the face of all this it would seem your industry is in the way of getting some breaks. This housing is all war-housing, the shelter which must be provided or else there may be trouble about war production. They have already found since Pearl Harbor that people who sleep in their cars, or camp in parks, show a decided minus in productive capacity. Washington is now so utterly sold on the desperate need of providing proper shelter that the question no longer is the shelter but how to make it available most quickly.

There is plenty reason to throw brickbats at Washington for many stupidities; but do not blame it too much for the housing muddle. On the whole, the NHA and its various subordinate parts are doing the best they can with the equations they have to handle. Always bear in mind, no matter what variations you may hear about, there is a sound and sober steadiness in the direction, now; they are holding the course along the general lines as charted in the beginning of this letter. When something happens that appears to be a shift, you may attribute it to three reasons: poorly disseminated information; the unavoidable twists and turns in the plans of those who direct the war itself; and the need for instant shelter by reason of the uncertainties in the unfolding the events of the war.

The mutability of the war plans is something you have to expect. It is inherent in war itself and in the people who run wars. For example, you may remember the Higgins incident, when they closed the shipbuilding plant in New Orleans. The prospective program down there called for more housing, to be constructed at intervals. NHA had the thing in hand. Of course, when the shipyards were abolished there were plans and materials and equipment and workers, destined to put up the housing around New Orleans, stopped in mid-career. Everything planned

for New Orleans had to be shifted elsewhere.

Being in the business yourselves, you will realize that the re-orientation of such plans is not easy. NHA has learned its plan of work must always be flexible. It is much in the same situation as are the forces on the actual battlefield. It must constantly be ready to shift to make an attack in a new and unexpected place. There really cannot be a static plan. The unanticipated needs of the war create entirely new requirements of production. It has happened, and it will unquestionably happen again, that a place regarded as a positive center for war production will not be used, and that another locality, perhaps unheard of today, will develop into a center with a need for a great number of shelters.

Scarcely a week goes by when NHA does not have an urgent call from Army or Navy to provide instant shelter for workers who are about to start on a new air base, or a new war plant. Or it has happened that some production center, with a huge new housing community, suddenly, for perfectly sound military reasons closes down. The workers leave that place and the housing is completely superfluous. The problem obviously is to put that excess somewhere where it may be useful. All of this should make it easy to understand why it is difficult for any one to give you a static list of the places where the projects will be built. At the end of this Letter will be assembled the most complete enumeration of places for war housing that has been assembled. It is the result of careful and patient work. At this time this list is letter perfect. But if you find there are no projects at some of the places named, bear in mind that situation is caused by circumstances no human being can control.

Who Plans the Program

To understand more clearly how war housing plans are controlled and supervised it is essential to get this picture. Over and above all other housing agencies is the NHA. It makes the plans and the policies. You might call it the holding corporation for the agencies that actually do the job. These agencies all are its constituent parts. They include the Federal Home Loan Bank which the public most frequently meets as the Home Owners Loan Corporation. (More about the relation of the HOLC to the housing program later in this Letter.) Then there is the Federal Public Housing Authority, and the Federal Housing Administration, and, finally, the Homes Use Service. The Federal Public Housing Authority builds the dormitories, the temporary houses, the permanent dwellings, and it supplies the prefabricated houses and the trailers and other makeshift shelters when required, for some instant, speedy need.

The Federal Housing Administration performs the services for which it is well known; it guarantees the loans made by banks and other financial institutions to private persons who build War housing. The Homes Use Service is the latest addition to the NHA family. It plans and supervises the conversion of existing homes and buildings to use as dwelling units for War workers. The Home Owners Loan Corporation furnishes the money for the conversions, and makes the lease contracts with the owners, and collects the rents and looks after the business with War-worker tenants.

Administrator Blandford of NHA is responsible

for the statement that 75,000 new war housing units are now under construction, provided mainly by Federal Public Housing Authority, and some by private enterprise with loans guaranteed by FHA. Another 75,000 have been designed and will be built under the more liberal regulations that obtained before the tight War Housing Construction Standards were imposed by WPB late in October. The balance, 145,000 dwellings units, to be built by Federal Public Housing Authority and under FHA guarantees, must conform to the new Housing Standards.

In passing it may be interesting to learn that these Standards are the product of much undercover battling in Washington late in October. WPB, having planned to launch the Controlled Materials Plan, was determined to place these drastic housing restrictions in effect swiftly. To soften the opposition it anticipated, WPB first issued the Order which stopped all construction, the theory being that the industry would accept the Housing Standards rather than quit altogether. It is said WPB felt that even the new Standards would probably cause the industry to feel that the restriction would make commercial operations all but impossible. It was at this stage that Congress became vocal, and raised such a rumpus that WPB apparently backed down on some of its original restrictions in the new Standards, and gladly accepted the offer by NHA to distribute materials among public and private builders and enforce compliance with the new Standards.

Where Do We Get Our Steel

When the Controlled Materials Plan was announced, Director of Civilian Supply Leon Henderson—he has as many titles as a foreign diplomat has decorations—told us that for the fiscal year ending in July, 1943, all civilian industries would have not more than an aggregate of 1,000,000 tons steel, and 17,000 tons copper, to draw upon. The latest report from WPB states that the war housing program, public and private, has been allocated 60,000 ingot tons steel for the fourth quarter of 1942, which is equal to 80,000 dwelling units. Soft lumber also is exceedingly scarce, but it is anticipated the supply will be adequate for these units together with the masonry material to be used. The understanding is also that manufacturers of equipment such as furnaces will be able to secure additional allocations of gray iron. It is apparent that even NHA is obliged to make a stiff fight for the materials required for its war housing program.

In addition it finds that the dormitories are not as popular as they seemed in the beginning. Single workers and childless couples are much preferred in the war industries, but they wish to live in homes. To make the problems even more complex, they seek houses that are detached and under the new Standards it is difficult to build anything but group or row houses.

Single family houses may not be built unless they are located on lots contiguous to all utilities. As the family dwellings are now planned they have from 1 to 3 bedrooms. The 6-room house seems to be the average. It is obvious that information about the building program in this category must be obtained from those who are constantly in close touch with what is happening. They tell us here that all equipment is purchased in the field, where the job is located. And they suggest that those who wish to place

(Continued on page 76)

Interpretations, Amendments, Easements To Existing Orders

Classification System Revoked

REMEMBER the Allocation Classification System (Priorities Regulation No. 10)? We published the order with explanation in the July, 1942, issue, page 28, and additional explanation in September, page 24.

This is the regulation which required every purchase order to bear an "end use" symbol and number so Washington could tell where every bobby pin went to.

The whole thing has now been revoked. It's dead; you can throw away your rubber stamps. Only three end use reports will from now on be required—(1) copper sales from copper mills, brass mills, copper wire mills, copper foundries; (2) General Preference Order M-17 "delivery of pig iron"; (3) General Preference Order M-21 "delivery of steel or iron products."

Report Copper Sales to CRC

OWNERS of idle stocks of copper and steel, and their alloys, who sold directly to authorized war producers, as permitted by Priorities Regulation No. 13 (September, 1942, page 27), are now required to report such sales by an amendment to that regulation.

When a sale is made of copper from inventories previously reported to the War Production Board, care Copper Recovery Corporation, 200 Madison Avenue, New York, New York, the seller must now send a copy of the invoice to CRC.

Sellers of steel from reported inventories should address their invoice copies to WPB, care steel Recovery Corporation, 5835 Baum Boulevard, Pittsburgh, Pennsylvania.

Amended PR No. 11

ANUMBER of important changes in Priorities Regulation No. 11 (July, 1942, page 24), as amended October 3 (November, 1942, page 28), are made by Amendment No. 2 to that version. Changes are:

1—The period of time within which a PRP unit must cancel or postpone its purchase orders, so that the ratings and quantities do not exceed authorization on its PRP certificates, is extended to seven days, including Sundays, after receipt of the particular certificate, instead of five working days.

2—A PRP unit may accept delivery of material in excess of its authorization, if the materials were in transit when the supplier received notice of cancellation or postponement, provided such notice was re-

ceived by the supplier not later than ten days after receipt of the unit's certificate.

3—A PRP unit may accept delivery of materials other than, or in excess of, those authorized on its PRP certificate to the extent that it is entitled to extend AAA ratings.

4—A PRP unit which filed an application for ratings for materials to be used during the second quarter of 1943 on Section H of the first quarter PD-25A application, may now employ the interim procedure with regard to such material, pending the return of its PD-25A for the first quarter.

5—Any PRP unit which receives during a quarter any listed material other than, or in excess of, the quantities authorized by its PRP certificates, or by specific authorization of the Director General for Operations, must report promptly such receipts to WPB, together with a statement of the reasons why such receipts were necessary, and citing the provisions in Regulation 11 which permit such receipts.

6—The Amendment also revises the Metals List of Regulation 11 so as to include only those items appearing in Materials List No. 1, revised, of the PD-25A application form for the first quarter of 1943.

Repair Parts Certificate

PURCHASE orders for necessary repair and maintenance parts for many items of general industrial equipment must be accompanied by a certificate, reciting the nature of the purchase, in accordance with an amended order issued November 23.

The amended order (Limitation Order L-123, as amended) also clarified some of the definitions of specific items of equipment included in List A, attached to the original order (L-123). It further adds to the list a number of items, among them industrial dust collectors, conveying machinery, industrial fans and blowers (including attic fans) air washers, heat exchangers (not domestic use), motor generator sets and certain other items related to motor and control equipment which were affected by limitations imposed by the original order.

The order as amended becomes effective December 1, 1942.

Following is the certification:

I hereby certify that the above (or attached) order is in compliance with paragraph (c) of General Limitation Order L-123. The order is for maintenance and repair parts as follows:

.....
(state here whether order is for parts not exceeding \$1,000 for each piece of equipment covered thereby, or for parts for equipment which has broken down).

.....Company

By.....
(Authorized Official)

Official Ruling on Gutters and Downspouts

A GREAT deal of confusion has arisen over gutters, spouting, conductor pipe as permitted and prohibited in M-126. To clarify the situation the following questions were sent to Henry T. Bourne, Acting Chief, Appeals Branch, WPB. Mr. Bourne has furnished answers to the questions and readers are also referred to the publication in this issue of M-126 as amended November 21, 1942.

American Artisan
Keeney Publishing Company
6 North Michigan Avenue
Chicago, Illinois.

Re: Order M-126 as Amended November 5, 1942

For your information Order M-126 was completely revised as of November 5, 1942, and a change was made therein with respect to gutters and downspouts. In addition, amendment No. 1 to Order M-126 as revised was issued on November 21, 1942. This amendment also affects the gutters and downspouts item.

The single family dwelling item remains unchanged. Consequently, the revised Order contains the following item on List A:

"Gutters, spouting, conductor pipe, and fittings for single family dwellings."

The Revised Order added the following item to List A together with a governing date of November 5, 1942:

"Gutters, spouting, conductor pipe and fittings for dwellings two stories or less in height (2 family or more)."

The maintenance and repair exception which was inadvertently omitted in the revised Order was added to the above item by the above mentioned Amendment No. 1.

Your inquiries which are answered below have been considered in the light of the foregoing revision and amendment.

(1) *Question:* Is a contractor who makes gutters and spouting from flat sheets a manufacturer subject to the restrictions and prohibitions of Order M-126?

Answer: Any person who processes iron or steel to make an item on List A is subject to the restrictions and prohibitions of Order M-126. It follows that a contractor who makes gutters and spouting from flat sheets is subject to the provisions of the Order.

(2) *Question:* Can either a manufacturer or a contractor fabricate gutters and spouting for installation on new multi-family and commercial buildings?

Answer: A person may fabricate gutters and spouting for installation on new dwellings 2 stories or

less in height for 2 families or more for 30 days from November 5, 1942, subject to the provisions of paragraph (b) of the Order. Gutters and spouting for new multi-family dwellings of more than 2 stories and commercial buildings do not fall within the foregoing restrictions.

(3) *Question:* Can a manufacturer or a contractor fabricate gutters and spouting for installation on new single family dwellings?

Answer: No. This is prohibited by the provisions of the Order applicable to the item on List A as set forth above with respect to single family dwellings.

(4) *Question:* Can a manufacturer sell gutters and spouting to a contractor for installation and repair on multi-family or commercial buildings?

Answer: Order M-126 does not restrict either the fabrication or sale of gutters and spouting for maintenance and repair purposes regardless of the type of dwelling or building.

(5) *Question:* Can a manufacturer sell gutters and spouting to a contractor for installation repair of a single family dwelling? Is there any poundage limit to the amount of gutters which can be installed for repair on a single family dwelling?

Answer: The first part of this question has been answered in (4) above. There is no poundage limitation for the reason that gutters and spouting for maintenance and repair purposes have been specifically excepted from the provisions of the Order. In this connection, your attention is directed to the last sentence of paragraph (h) (7) which reads:

"The limitations in this paragraph (h) (7) on repairing a used article shall not apply to any item on List A or List S, or part thereof, to the extent that maintenance and repair of such item is specifically executed on List A or List S."

(6) *Question:* Is any distinction made on single-family dwellings when the gutter empties onto a lawn or when the gutter empties into a sewer?

Answer: No.

(7) *Question:* If a contractor has flat sheets in stock, purchased in 1941, can this contractor make and install gutters and spouting without priority rating on any type of building and in any quantity?

Answer: The fabrication of flat sheets into gutters and spouting, regardless of when the flat sheets were acquired by the fabricator, is subject to the restrictions and prohibitions of the Order. The matter of preference rating naturally depends upon the provisions of Priorities Regulation No. 1 as applied to a particular fabricator.

Blowers Used on Forced Air Systems

REPORTS N.W.A.H.&A.C. Ass'n: This association has had considerable correspondence with the Fan and Blower Section of the War Production Board in Washington with reference to the interpretation of Industrial Machinery Order L-123, which interpretation includes forced warm air heating blowers.

We asked for the reasons why an Industrial Machinery Order L-123 was interpreted to include heating blowers. We quote in part letter dated September 29 from the War Production Board:

"Under List A, Item 4 of Order L-123, it was the intention to cover all blowers. The reasons for this is that, regardless of size, we all have to agree that there is critical material used. Therefore, the blowers designed for use with heating equipment are restricted by the order. It is the opinion of the General Industrial Equipment Branch that the blowers already fabricated and in stock will be used in many different ways toward the war effort."

In List A referred to in the above quotation ITEM

No. 4 reads as follows: "INDUSTRIAL BLOWERS." We also quote item No. 8 as follows:

"Electric motors, one horsepower and over; except motors for farm use covered by General Limitation Order L-26."

We quote further from the above letter:

"We would suggest that if you have in mind manufacturers, producers, or dealers, who have large stocks of blowers, that they report their inventory of blowers, giving number and sizes to the General Industrial Equipment Branch. They may have some

suggestions as to where they may be used."

We suggested an interpretation within the meaning of the order to include blowers equipped with a one-horse power motor or larger which would require a rating of A-1-C or better.

This office decided that it would have nothing further to do with the interpretation in question and suggested to the Fan Blower Division of the War Production Board that they communicate directly with blower manufacturers, in connection with any information they wanted them to have.

You Can Borrow on Frozen Gas Furnaces

October 20, 1942.

Mr. Alfred Little,
Bureau of Finance,
War Production Board,
Washington, D. C.

Dear Mr. Little:

In the Bulletin received from the National Warm Air Heating & Air Conditioning Association, the announcement is made that WPB is purchasing oil burners and oil burner-furnace units at favorable prices from manufacturers who have frozen inventories. The bulletin also states that gas fired equipment has not as yet been purchased, but that consideration is being given to purchase gas furnaces.

My question is—what purchasing facilities are available and what procedure must be followed in order for a contractor to sell frozen oil burners, oil-burning furnaces, and gas furnaces? This contractor, of course, will be in an area where no new gas or oil equipment may be sold because of the limitation orders.

A very rough survey we made some months ago indicated that there must be many thousands of gas furnaces frozen in inventory. Contractors, of course, will be anxious to dispose of this inventory if it is possible.

As complete information on where, how and how much will be very much appreciated.

Sincerely yours,

AMERICAN ARTISAN

JDW:k

J. D. Wilder, Editor.

WAR PRODUCTION BOARD
Washington, D. C.

November 6, 1942

Mr. J. D. Wilder, Editor
American Artisan
Keeney Publishing Company
Chicago, Illinois

Dear Mr. Wilder:

Your letter of October 20 got into other hands and was only received by me today in regard to the program for offering relief to manufacturers of heating equipment.

You specify in your letter a contractor—arrangements have been made to cover manufacturers, distributors, and dealers. I do not know just what you mean by contractors. The WPB is particularly interested in manufacturers of heating equipment and wish

to encourage them to convert their facilities to the war effort. In order to help them with their frozen inventory, arrangements have been made with the Defense Supplies Corporation, a subsidiary of the RFC, to make a contract agreeing to purchase the frozen inventory of furnaces.

Please do not get the impression that the WPB is buying furnaces, as we have only made it possible for manufacturers to get assistance and the word contractor is rather confusing.

Yours very truly,

ALFRED E. LITTLE,
Division of Field Operations.

Mr. Alfred E. Little
Division of Field Operations
War Production Board
Washington, D. C.

Dear Mr. Little:

This is in answer to your letter of November 6th answering my letter of October 20th.

By a contractor we mean a retailer who buys furnaces from furnace manufacturers, or a jobber, and installs these furnaces with the necessary pipes and fittings in residences and commercial buildings.

The contractor does not manufacture the furnace—he installs it.

You will appreciate the fact that at the time gas furnaces were frozen, the gas furnace was a very popular type of heat unit for the builders of new small houses. Many contractors entered the gas furnace frozen period with stocks of furnaces on hand from a dozen to a hundred furnaces.

These contractors have not been able to dispose of their furnace inventories because they can only sell the furnaces "upstream" and the jobbers and manufacturers have frozen inventories on hand.

My question was—If Defense Supplies Corporation has an arrangement to purchase frozen furnace inventories in the hands of furnace manufacturers, is there also an arrangement whereby DSC can buy frozen inventories in the hands of contractors?

I use the word "buy" understanding that DSC is not actually purchasing equipment but is arranging for the purchase.

An early reply will be appreciated.

Yours very truly,

AMERICAN ARTISAN,
J. D. Wilder, Editor

JDW-MW

November 19, 1942

WAR PRODUCTION BOARD
Washington, D. C.

November 23, 1942

Mr. J. D. Wilder, Editor
American Artisan
Keeney Publishing Company
6 North Michigan Avenue
Chicago, Illinois.

Dear Mr. Wilder:

This is in reply to your letter of November 19 in regard to the frozen inventory of dealers in gas furnaces.

The Defense Supplies Corporation does not offer any plan for relieving dealers and distributors of frozen inventory of furnaces, but these dealers and distributors have the privilege of applying to the nearest office of the Reconstruction Finance Corporation for relief under Public Law 549, 77th Congress, Senate Bill 2315.

I believe this answers your question, but if you are confronted further with any problem, please let me know.

Yours very truly,

Alfred E. Little,
Division of Field Operations.

Editor's Note: Public Law 549 is the Murray-Patman Act originally intended to offer automobile dealers a means of selling or borrowing on cars frozen. The law now can be used to alleviate many other classes of frozen inventories. The contractor may do two things: (1) he can get a 19-month loan; loan begins at time product was frozen (gas furnaces were frozen in 17 states on March 1, 6 other states on May 15, and is applied nationally as of November 15) on which he pays 4 per cent interest and if furnaces are still frozen at the end of the 19 months he may then offer the furnaces for sale to RFC or (2) he may sell immediately to RFC at cost plus transportation, handling and storage costs. There are 31 RFC offices; if you want the address of the office nearest you write us.

L-31

WAR PRODUCTION BOARD
L-31 as Amended November 12, 1942.

PART 1056—NATURAL GAS

[Limitation Order L-31. As Amended November 12, 1942]

Limitation Order L-31 (§ 1056.1) is hereby amended to read as follows:

§ 1056.1 *General Limitation Order L-31*—(a) *Definitions*. For the purposes of this order: (See Artisan, March, 1942, Page 34; March, Page 28 for areas, definitions and utility regulations).

(e) *Restrictions on deliveries of gas applicable on and after November 30, 1942*. (1) On or after November 30, 1942, no utility shall deliver to any non-residential consumer, and no such consumer shall accept delivery of natural gas for the operation of any gas-fired equipment (including space-heating equipment) unless:

(i) Such equipment was installed (or if converted from some other fuel to natural gas, such conversion was completed) prior to November 30, 1942, at the

same premises: *Provided*, That deliveries of natural gas for the operation thereof were not prohibited prior to that date, by the provisions of paragraph (d) of this order, or

(ii) Such equipment replaces similar type gas-fired equipment of equal or greater capacity previously installed or operated by the same consumer at the same premises for the same purposes, or

(iii) Such deliveries have been specifically approved by the Director General for Operations.

(2) On or after November 30, 1942, no utility shall deliver to any residential consumer and no such consumer shall accept delivery of natural gas for the operation of any space-heating equipment unless:

(i) Such equipment was installed (or if converted from some other fuel to natural gas, such conversion was completed) at the same premises prior to November 30, 1942: *Provided*, That deliveries of natural gas for the operation of such equipment were not prohibited prior to that date by the provisions of paragraph (d) of this order, or

(ii) In the case of new construction in any area listed in Exhibit B, such equipment was specified in the construction contract and was installed prior to March 1, 1943, and the foundation under the main part of the structure in which the equipment is to be installed was completed in Area I prior to March 1, 1942, in Area II prior to March 20, 1942, in Area III prior to May 15, 1942, in Area IV prior to August 10, 1942, in Area V prior to September 15, 1942, or in Area VI prior to November 30, 1942, or

(iii) Such equipment replaces gas-fired equipment of equal or greater capacity previously installed or operated at the same premises whether by the same or by another consumer: *Provided*, That nothing contained in this subparagraph shall authorize the delivery of gas for the operation of central space-heating equipment which replaces non-central space-heating equipment or central space-heating equipment of a different type, or

(iv) Such deliveries have been specifically approved by the Director General for Operations.

Provided, That deliveries of natural gas may be made to residential consumers in those areas not listed in Exhibit B for the operation of any space-heating equipment.

(3) On or after November 30, 1942, no person shall install or cause to be installed gas-fired equipment designed to receive deliveries of natural gas from any utility if such deliveries are prohibited by this paragraph (e).

(4) Applications by all consumers for exemption from the space-heating restrictions of this order shall be made on Form PD 673. Applications by non-residential consumers for exemption from the restrictions on deliveries for non-space heating purposes shall be made on Form PD-672.

EXHIBIT B

AREA I

Alabama (except the area served by the United Gas Pipe Line Company).

Arkansas (only the area served by the Mississippi River Fuel Company).

California.

District of Columbia.

Georgia.

Illinois.

Mississippi (except the city of Natchez, the towns of

Indiana.

Kentucky.

Maryland.

Michigan.

(Continued on page 69)

On Our Industry's Front

Deferment of Essential Mechanics

NATIONAL Warm Air Heating and Air Conditioning Association has appealed to War Manpower Commission to grant some deferment or make some essentiality ruling for mechanics required to keep warm air heating systems in first rate condition during the coming heating season. The association reports that Plumbing and Heating Branch of WPB as been asked to intercede and has asked WMC to include these heating service men in the new list of deferred classifications which will shortly be distributed to 6,500 draft boards.

No decision has been made in Washington, so far as we know.

This problem needs the cooperation of every group voice in the industry. In other words, every association should state their case to Plumbing and Heating Branch, WPB and to War Manpower Commission. Some efforts have been made. An example is the letter sent to members of the Sheet Metal Contractors Association of Illinois by President J. E. Peterson. If the membership approves the letter it will be sent to WMC. The letter follows:

Greetings:

It has become evident a shortage of business units and labor to serve the heating needs throughout the Mid-west has developed. The need to restore heating equipment to efficient and safe operation and the depletion of labor by draft and war industries, has brought about a situation where it is necessary, for the owners of many of the surviving business units to actively participate in the service, repair and installation of heating equipment.

Our responsibilities to our communities to keep 'em heating is not a simple one. Thousands of modern installations are doing a safe and economical job. But there are millions of old installations in a critical condition. Those of us who go into the basement, look at them and work on them, often have to dive down deep into our bag of tricks to carry them through. The "no heat" call is our command for immediate action. This will be our responsibility and duty to our community and nation until we have only baling wire and chewing gum left in the bag.

As we consider our responsibility and the demands upon us, we become aware that *nothing has been said about man-power in the industry*. Rather, to the contrary the vital essential nature of our industry is overlooked by L. M. Hershey, Director of Selective Service, when he states in a letter dated September 25th: "*It is not likely, however, that men operating warm air heating businesses will be considered as necessary men.*"

Our business units cannot be manned by novices. Academic knowledge is essential but does not supplant the experience of time.

Further depletion of man-power and business units may develop serious consequences. When we consider present demands upon us, it becomes evident that if proposed selective service quotas are fulfilled, the induction of older men will make inroads into our established business units and cause their services to cease. Those remaining will become shackled by insurmountable demands.

Further, when our independent shops become so few they cannot fulfill demands, large organizations who can manipulate personnel to circumvent vacancies

caused by draft, will find a fertile opportunity to expand and point to their fortitude for years to come.

Whatever your draft status, this is our problem—your problem. We must act in unison and at once to establish the essential character of our industry with Selective Service at Washington. We should demand consideration for the needs of the community we serve.

If it is the duty, for those among us subject to induction, to serve; then there could be no question. But the vital need for our civilian function should be considered *before* our industry becomes depleted further of its service units, as has occurred in other industries.

Release of this letter among associations and contractors is solicited. Replies of opinion and comments are urged.

Yours very truly,
(Signed) J. E. Peterson,
President.

Passenger Cars for Trucks

USERS of passenger cars as trucks are not eligible for Certificates of War Necessity unless "the vehicle has undergone a genuine structural change, reasonably permanent in nature, which makes it likely that property, rather than passengers, will be carried," the ODT said.

Moreover, the owner must establish the fact that his business or occupation requires the use of a property-carrying vehicle, rather than a passenger-carrying one, in order to qualify fully for a certificate.

Merely painting the windows of a vehicle, or removing seat cushions, or removing a door, or attaching a towing device to the axle of the vehicle, does not make it a commercial vehicle.

Temporary Gasoline

A PROVISION for granting temporary transport rations to trucks and other commercial vehicles for which Office of Defense Transportation Certificates of War Necessity have not been issued is announced by the Office of Price Administration.

The provision is included in Amendment No. 1 to the new nation-wide gasoline rationing regulations and was effective November 21.

Transport Rations

Section 1394.7808 *Temporary Transport Rations.*—

(a) Any person requiring gasoline for the operation of a commercial motor vehicle who has made application for a Certificate of War Necessity but who has received no notice of any action thereon may apply between November 23, 1942, and December 31, 1942, inclusive, for a Temporary Transport ration pursuant to the provisions of paragraph (b) of this Section, and no Certificate of War Necessity shall be required to be presented in connection therewith.

(b) An application for a Temporary Transport ration may be made, in duplicate, to any Board during
(Continued on page 72)

AMERICAN ARTISAN

RESIDENTIAL AIR CONDITIONING

S E C T I O N



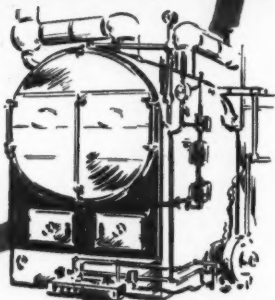
DEVOTED TO HOME AND SMALL COMMERCIAL AIR CONDITIONING

CALLING ALL DEALERS...YOU CAN HELP

CONSERVE COSTLY HEAT
...Insulate for
VICTORY!



Insulation for boilers,
breachings and ovens.



Pyrofelt INSULATING BLOCKS

are unparalleled for durability and low heat loss. Easy to apply—will conform to curves and irregular surfaces without preparation and cutting. Their flexibility and resiliency automatically insures complete closure of joints and seams. Vermin-proof, fire-proof, vibration-proof, moisture-proof. In great demand by industrial plants everywhere



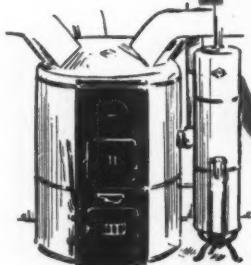
Extensively used
on heating and
ventilating ducts.

MINFELT INSULATING CEMENT

Easy to mix—add fresh water only! Easy to apply—experienced labor not required. Use to advantage on irregular surfaces of all kinds.

MINFELT INSULATING KIT

A handy form—you obtain the exact amount of material required for any specified job — there is no waste!



For furnaces and
hot water tanks.

DISTRIBUTORS ATTENTION!

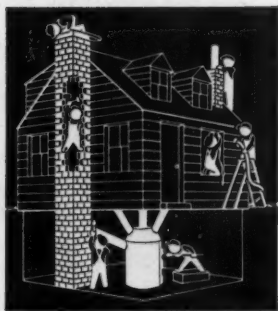
Get the facts about all THREE today. The demand is great—and the profits are unlimited. No priorities required!

MITCHELL & SMITH, INC., Mineral Felt Division
9505 Copland Avenue, Detroit, Mich.

Gentlemen: I am interested in becoming a distributor of Mineral Felt Products. Please send me literature and complete information.

NAME _____
STREET _____
CITY _____ STATE _____ 9505

**MAIL
TODAY!**



Keep 'em Heating

Maintaining existing heating plants in highest possible heating efficiency and advising the owner on what he can do to conserve fuel is the patriotic duty of every furnace dealer. These "Keep 'em Heating" articles will summarize the latest technical and merchandising thought of the industry.

Build Your Fuel Conservation Program Around These Facts and "Helps"

LAST year American home owners and renters consumed the following quantities of fuel for heating:

Coal	102,000,000 tons
Oil	115,000,000 barrels
Gas	212,745,000 MCF

Potential savings amount to the following quantities:

Coal	25,500,000 tons
Oil	19,166,000 barrels
Gas	21,274,500 MCF

By converting both of the above sets of figures into Btu's, the possible overall saving in all fuels is found to be 22.6%.

The indicated fuel savings by American home owners would be of incalculable aid to our all-out war effort. The 25,500,000 tons of coal saved would move 153,100,000 gross tons of freight 3,000 miles. The 19,166,000 barrels of oil saved would release for other duty 7,743 tank cars which would otherwise have to transport house heating fuel between October 1, 1942, and May 1, 1943. The 21,274,500 thousand cubic feet of gas saved would supply war factories with this much more gas without a corresponding increase in the production of gas. In addition, there would be important savings in manpower, in truck miles, in rubber and gasoline, which, though not subject to exact measurement, should not be overlooked.

By saving 25,500,000 tons of coal, 19,166,000 barrels of oil, and 21,274,500 thousand cubic feet of gas, American home owners will profit by a total of \$256,300,000 in the 1942-43 heating season.

There are two ways to save fuel:

1. Generate heat in the boiler or furnace in the most efficient way possible.
2. After the heat is generated, keep it in the house . . . Don't let it escape outdoors.

A. HEATING PLANT EFFICIENCY

(1). Oil Burners (Adjustments)

It has been estimated that 17 out of 20 oil burners in American homes are about to start their third to twentieth (or more) year of service. Government

data indicate that when "average" heating plants are adjusted to Department of Commerce, Bureau of Standards efficiency ratings, savings up to 25% or 30% can be effected.

Frequently, proper adjustment and repairs will produce up to 40% increases in efficiency. Among the adjustments and minor changes which can be made to reduce fuel consumption are the replacement of nozzles, change in type of radiator valves, cleaning boilers and flues, installation of new steam boxes, new baffles, new combustion chambers, new draft regulators, and a general "tuning" of the entire unit.

Combustion testing of oil burners is a job for the experts if the highest possible efficiency is to be obtained. In making adjustments, the expert service man should use combustion testing instruments on all oil burners. Service men who do not own instruments or do not know how to use them accurately are not capable of tuning an oil burner. A good service man applies three instruments to the testing of an oil heating plant. These are:

- (1). a stack thermometer
- (2). a draft gauge, and
- (3). a flue gas analyzer.

Few home owners know whether their oil burner is in the class of four-cylinder car getting 8 miles to the gallon or a more efficient car of the same size getting 20 miles. An efficient burner may lose 15% of its heat up the chimney; and an inefficient burner as high as 60%.

(2). Coal-fired Heating Plants: (Boiler and Furnaces)

a. Types

(1). Warm-Air Furnaces

A vacuum cleaning every year or two by a competent service man will keep the furnace clean, with one important exception. The dome should be cleaned by rubbing it with steel wool. A layer of dirt on the dome virtually stops the effectiveness of that part of the furnace radiator through which most of the heat is transferred. [Editor's Note—Bulletin 141, Eng. Exp. Station, U. of I., shows no proof of this statement. We can't verify.]



An Important Government Message:

How to HEAT YOUR HOME WITH LESS FUEL This Winter

To insure the health and comfort of
your family . . . and add to America's
fighting power, take these 4 steps now:

- 1 Inspect and adjust heating equipment.
- 2 Insulate walls, and roof or attic.
- 3 Install storm windows and doors.
- 4 Weather strip and seal air leaks around windows and doors.

Prepared jointly by: Office of Petroleum Coordinator
War Production Board
Office of Price Administration
Bituminous Coal Consumers' Council
Office of Solid Fuels Coordinator
Office of War Information

This leaflet (prepared by Office of Petroleum Coordinator) tells why there is a fuel oil shortage and lists the ways fuel can be conserved. Copies for distribution can be obtained free from your local OPC office. An excellent leaflet to be handed your customer.

If the furnace has a blower and air filter, it is important to keep the filter clean.

Certain places on the furnace are for the purpose of supplying air. No air should enter the furnace at other points. Consequently, all joints should be air-tight.

(2). Boilers

An "overcoat" on the boiler will prevent a steam or hot water system from heating the basement unnecessarily. Shredded asbestos and water mixed to a stiff paste, applied about 2 inches in thickness, and covered with sheets of muslin will do the trick. Outgoing heating pipes should be "jacketed" as well.

"Stale" water is better than fresh water in steam or hot water system. Fresh water contains oxygen, the chief cause of rust inside the boiler, piping, and radiators. After the oxygen is driven off, corrosion stops until fresh water is added. Therefore, it is well to drain off only the sludge in the lower part of the system, and add as little water as possible. Unless the house is empty during cold weather, when there is danger of the pipes freezing, there is no need to drain all the water off. Gauge glasses, water level controls, and relief valves should be in good working order.

Dirt, soot, and scale, more than anything else impair the efficiency of a boiler. Householders should call in a heating contractor to do a thorough cleaning job. He can clean soot out by scraping and using a furnace vacuum cleaner. He can remove scale by adding a chemical to the water and then draining the water after operating the boiler for 30 to 60 days. Vacuum cleaning should be done once every 2 years

at least, whereas scale should be removed twice a season in hard-water sections and once a year in other sections.

b. Coal Stokers

Stoker owners should keep the heating plant clean, properly adjusted, and in good repair. As in the case of oil burners, the service man should use combustion testing instruments. A coal stoker is considered efficient if tests show a carbon dioxide content exceeding 8% and a draft over-the-fire of 0.5" of water.

c. Hand-firing and Size of Coal

The following hints are taken from the "Guide" of the American Society of Heating and Ventilating Engineers:

An anthracite fire never should be poked or disturbed.

Egg-size pieces of coal are suitable for large firepots (grates 24 inches and over) if the fuel can be fired at least 16 inches deep.

Stove-size coal is the right size of anthracite for many boilers and furnaces used for heating buildings. It burns well on grates at least 16 inches in diameter and 12 inches deep. The grate should be shaken daily and the fuel fired deeply and uniformly.

Use chestnut size coal for firepots up to 20 inches in diameter, with a depth of from 10 to 15 inches.

Pea coal can be burned on standard grates but more care must be exercised in its use. Shake the grates only until the first bright coals begin to fall through.

UNIVERSITY OF ILLINOIS BULLETIN

Vol. 40 September 15, 1942 No. 4

ENGINEERING EXPERIMENT STATION
CIRCULAR SERIES No. 48

HAND-FIRING OF BITUMINOUS COAL IN THE HOME

BY
ALONZO P. KRATZ
JULIAN R. FELLOWS
AND
JOHN C. MILES



PRICE: TWENTY-FIVE CENTS
PUBLISHED BY THE UNIVERSITY OF ILLINOIS
URBANA

(Issued weekly. Entered as second-class matter at the post office at Urbana, Illinois, under the Act of August 24, 1918. Office of Publication: 229 Administration Building, Urbana, Illinois. Acceptance for mailing at the special rate of postage provided for in section 1103, Act of October 3, 1917, authorized July 21, 1938.)

This U of I Bulletin costs 25 cents, too expensive for general distribution, but is full of sketches showing how to fire a furnace. This is an excellent booklet for your sales kit—show customers its recommendations. Study these suggestions yourself, too.

After a new fire has been built, the fuel bed should be increased in thickness by the addition of small quantities of coal until it is at least level with the sill of the fire door. It is a good idea to draw the red coals toward the front end and pile fresh fuel toward the back of the fire-box.

When firing with pea coal, keep the choke damper open, and regulate solely by means of the cold air check and the air check and the air inlet damper.

Under exceptionally favorable conditions, and careful firing, No. 1 Buckwheat coal can be used, at least for banking at night; it costs less and an adequate supply is available.

Bituminous coal should never be fired over the entire fuel bed at one time. Part of the glowing fuel should always be left exposed to ignite the gases leaving the fresh coal. Air should be admitted over the fire through a special secondary air device, or through a slide in the fire-door or by opening the fire-door slightly. The fireman can judge the quantity of air to admit by noting when the air supplied is just sufficient to make the gases burn rapidly and smokelessly above the fuel bed.

The red fuel in the fire-box, before firing, should be pushed to one side or forward or backward to form a hollow in which to throw the fresh fuel. When low-volatile "smokeless" coal is used, the "cone-firing method" is effective.

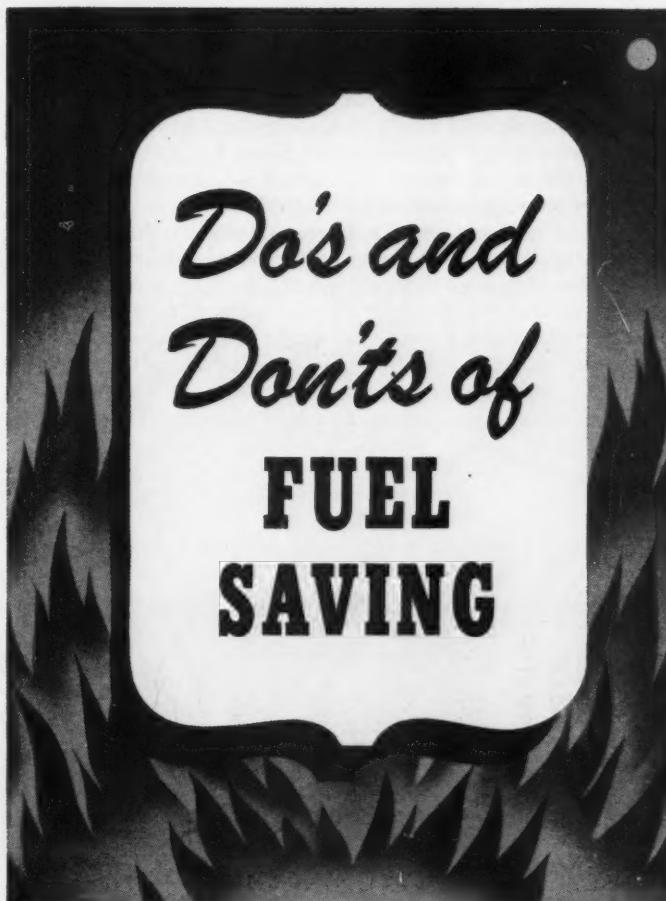
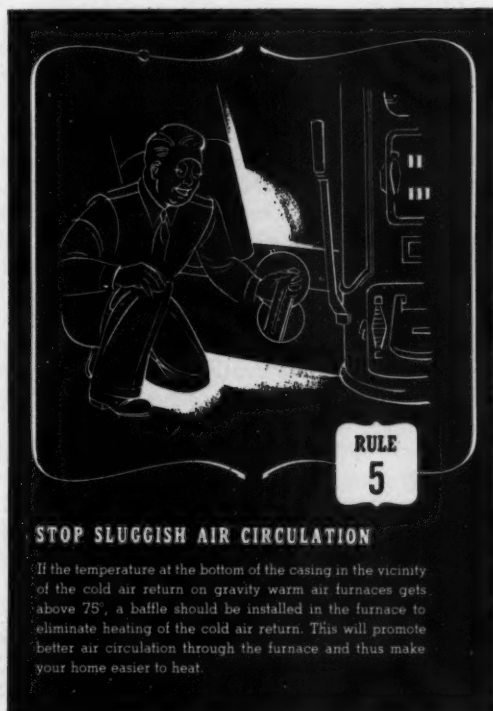
Better combustion is obtained by firing bituminous coal in small quantities at short intervals.

3. Gas Burners (Adjustments)

Owners of gas burners should contact their gas supplier, and ask him to provide a service man to inspect the burner and see that it is operating at maximum efficiency. A gas burner is operating efficiently when the test shows carbon dioxide content of the flue gases is between 8% and 10%.

b. Automatic Heating Controls

If a thermostat controls the temperature in the house, by all means turn it down on leaving the house



Cover of a 28-page booklet prepared by Minneapolis-Honeywell telling a picture story of how to save fuel. Is ready for mailing. Can be obtained from M-H main office or branches. The sketch below is typical of the drawings.



during the day for an extended length of time. Also, be sure the thermostat is set for a lower temperature at night.

c. Domestic Hot Water

The heating of service water, though not a large item in the fuel budget, nevertheless, is usually done at a waste of fuel. The most common fault is maintaining the temperature of water too high. Water of 140° F. is hot enough for normal purposes.

It is essential that all piping connections in the hot water heating system be tight, that storage tanks and pipes be insulated, and that firing equipment, if separate from the boiler, be clean and in proper adjustment.

Records show that hot water is used mainly in the morning and at night and on wash days. Most families, therefore, could adjust themselves to having hot water only at these times and thus save additional fuel.

Those who have hot water tanks attached to the heating plant should turn off the hot water heater during the day and let the hot water from the boiler or furnace supply daytime needs.

d. Chimneys

One of the most important things to remember in conserving fuel is not to waste heat up the chimney.

The purpose of a chimney is to provide sufficient draft for combustion. Too much draft causes too rapid

combustion and therefore excess fuel consumption. Too little draft means incomplete combustion which also leads to an increase in quantity of fuel burned. Fortunately, both of these conditions can be overcome by means of draft regulators in the smokepipe and mechanical draft blower, so there is rarely a need to rebuild an improperly constructed chimney.

However, the householder should have his chimney inspected at least once a year to be sure that it is clean, tight, and free from obstructions. Air leakage into the chimney through cracks in the mortar or other breaks interferes with the normal function of the chimney, and any such cracks or breaks should be repaired. Likewise, the smoke-pipe should be inspected and cleaned. Under no condition should it project into the chimney beyond the inside wall, and anything that falls into the chimney, obstructing its service, should be immediately removed.

Chimneys connected to open fireplaces should be fitted with tight-closing dampers. Be sure dampers are closed when the fireplaces are not in use. Other-

provements, if carefully planned and executed, generally pay for themselves in 3 to 6 years.

There are many things that can be done. But it must be remembered that every house has its own particular problems. For example, a one-story house generally has a large attic floor. If this is the case, chances are the first thing to do is to insulate that large floor area. On the other hand, a two-story house generally has many windows. The owner of such a house can conserve much of the heat that would otherwise escape by installing storm windows or weather-stripping.

I. Insulation

Studies show about 70% of all homes are entirely uninsulated. Much fuel may be saved by insulating such homes.

An open attic floor can be insulated by packing the insulation material snugly between the beams to a



KEEP AIR DUCTS OPEN

In any warm air system, keep rugs and furniture away from warm air delivery ducts and cold air returns, so that free circulation of air can take place. This may seem elementary, but it is disregarded in many homes.

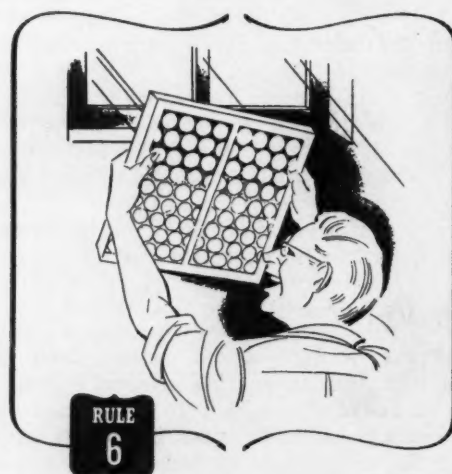
wise the warm air from the room will go out and cold air will come in, thus increasing the consumption of fuel.

If the chimney for a fireplace that is not used very often has no damper, you can plug the flue tightly with a crumpled newspaper, and then burn the paper away when you want to light the fireplace.

B. HOME IMPROVEMENTS TO PREVENT HEAT LOSS

Making a heating plant operate at maximum efficiency is only half the battle in saving fuel. The other half consists of minimizing the loss of heat once it has been generated.

Experience shows that in many homes the loss of heat can be reduced as much as 40% or 50% by certain improvements. Costs vary widely, depending on the type of improvement, material and labor required, and size of house. Savings in fuel likewise vary with these factors, as well as with other factors such as the severity of the winter. Nevertheless, such im-



KEEP AIR FILTERS CLEAN

Air filters on forced air heating systems must be kept clean. A good rule is to change the filter every year. The dirt that accumulates on the filter even in comparatively clean neighborhoods interferes with circulation of the warm air.

On these two pages are four more sketches from the Minneapolis-Honeywell booklet. Graphic picturization of fuel saving methods tell a more interesting and a stronger story than hundreds of words of conversation.

thickness of 3 or 4 inches. Material for insulating the attic floor of an average house (700 square feet) will cost between \$40 and \$50, and the amount of fuel saved may be as much as 15%.

Loose fill (mineral wool, fireproofed wood wool, or expanded mica pellets) can be used by experienced contractors to insulate the walls and ceilings of most houses that are already constructed. These materials can be blown by an air hose into spaces in the walls or above the ceilings.

The walls of a solid brick or stone home cannot be insulated after the structure is built as there is not sufficient air space for the insulating material. To insulate such homes, owners should concentrate on insulating the roof and attic floors. The walls of a brick or stone veneer house or a stucco house, however, can be insulated pneumatically.

Another use for insulation board is to cut two pieces of it to fit each window, one piece for the top half and one for the bottom half. The board for the upper

half of the window can be nailed in place on the outside of the window frame—weather-proofed board should be used. Half-drawn shades will conceal this piece from the inside. The board for the lower half can be attached at night from the inside. Not only will such pieces reduce loss of heat through the window, but they will serve in blackouts and will reduce the danger from splintering glass in the event of a real air raid. Studies show the householder may expect to save 1 gallon of heating oil—or an equivalent amount of other fuel—for each square foot of board used in this device alone.

2. Storm Windows and Doors

Another method of reducing heat loss is by the use of storm windows and storm doors. A tight fit is most important; otherwise much of the possible saving may be lost. A storm window, 34"x62-1/4", sells for about



SEE THAT STORM SASH FIT TIGHTLY

All glass in both regular and storm window sashes should be tight and should not rattle. Keep the storm sash closed as much as possible.

Experiments of Minneapolis-Honeywell engineers and of government fuel conservation agencies prove that storm windows are an important aid to fuel saving.

\$3, unpainted and untrimmed, and \$5 painted and installed. The cost of storm doors depend on the size and type.

If only a limited number of storm windows can be purchased, the householder should put them in rooms commonly used and heated and on the sides of the house exposed to prevailing winds. But storm sashes and doors are an economy at every outside opening. Heat does not pass readily through the still air between the inside door and the outside storm door or sash.

"Weep holes" should be bored at the bottom of the storm sashes and then plugged. Removing these plugs for a brief time will eliminate condensation when it appears on the outer glass.

3. Weather Stripping

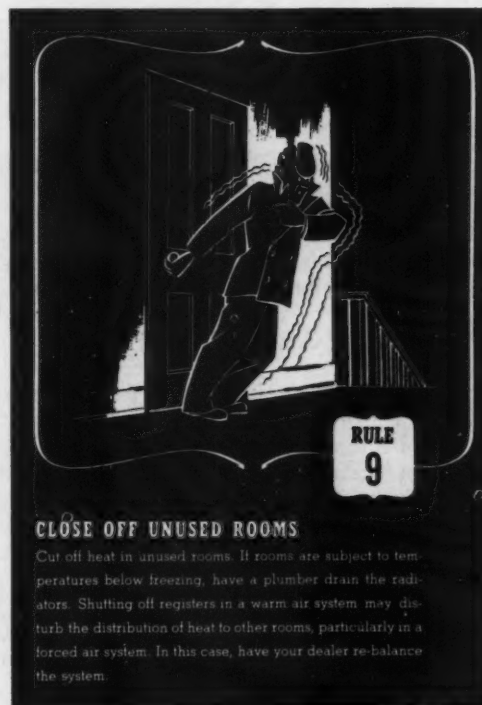
There are three types of weather stripping: (1) Felt, (2) wood, and (3) metal. Weather stripping helps to check the loss of heat and prevent the entrance of cold air through the frames of doors and windows. Complete weather stripping may reduce fuel consumption as much as 15% or more.

Felt or wood are inexpensive, and plenty is available. Tack the weather stripping snugly between win-

dow and wooden window frame and between door and door frame. For metal-frame windows, attach weather stripping by shellac or special cement.

Should the householder prefer metal weather stripping, instead of felt or wood, he should call in his local weather stripping contractor. (Priorities have eliminated the manufacture of all metal weather stripping with the exception of a limited amount of zinc.) Metal weather stripping costs more than felt or wood, but it is permanent.

In addition, inexpensive adjustable weather strips



CLOSE OFF UNUSED ROOMS

Cut off heat in unused rooms. If rooms are subject to temperatures below freezing, have a plumber drain the radiators. Shutting off registers in a warm air system may disturb the distribution of heat to other rooms, particularly in a forced air system. In this case, have your dealer re-balance the system.

can be obtained for attachment to inside doors leading to unheated rooms—bedrooms, attic, or basement.

4. Caulking

In homes of brick, stone, and stucco construction, there are apt to be many small openings between the outside walls of the house and the window and door frames. By closing up, or caulking, these openings, a noticeable reduction in fuel consumption can be made.

III CONVERSION

One of the ways in which fuel oil consumption can be reduced is by conversion of fuel oil heating units from oil to coal. It should be emphasized that no conversion should be made to gas or electricity. Substantial quantities of fuel oil are used in the manufacture of natural gas. In addition, war industries are already putting such heavy demands on the available gas and electric power that curtailment orders have been issued by WPB to cope with the anticipated shortage. For these reasons, any conversion from oil to either gas or electricity would serve no purpose in the general fuel conservation campaign and would only serve to further complicate an already serious situation.

Change-over to coal is possible in two distinct types of heating units: (1) oil burning space heaters and cooking stoves, and (2) oil burning central heating plants.



A. CENTRAL HEATING PLANTS

Estimates place the number of home oil burning heating plants in the 17 Eastern States and the District of Columbia at somewhere between 1,400,000 and 1,500,000 units. An additional 700,000 units are in use in the North and South Central States. The number of these that can be converted to coal is problematical.

Under ideal conditions and circumstances of absolute necessity, it would be theoretically possible to convert as high as 80% or more of these oil burners to coal. The practical figure, however, is considerably lower. Two surveys, covering 1,000 dwellings in the Eastern area, indicate that conversions are really possible in about 23% to 29.6% of the cases and that another 25% to 26.8% could be converted by the purchase of new grates. The complete tabulations of these two surveys are given below. It will be noted that the lower figure for probable conversions appears in the 1942 survey. This decrease from 1941 may, in part, be due to the sale of grates for scrap and in part to the sale of oil burners to former coal users.

What Can We Convert?

Oil burning central heating plants are of two types: those designed primarily as oil burning units, and former coal burning furnaces which have had oil burning units installed. The latter type, equipped with fire doors and ash disposal facilities, are, with few exceptions, the only units which can be converted (or more correctly re-converted) to coal. Results of the two surveys show that as of June, 1942, 30% of the oil burning central heating plants in the East were primarily designed for oil, an increase of 10.4% in relation to all oil units over the previous year.

	Survey	
Conversion Heaters	Aug. 1941	June, 1942
Grates available, lugs intact...	29.6%	23.0%
Grates missing, lugs intact....	26.8%	25.0%
Grates and lugs missing.....	24.0%	22.0%
Oil Burner Units		
Could be converted (enclosed units)	8.4%	10.0%
Impossible to convert (integral units)	11.2%	20.0%

The percentage of possible conversions in the North and South Central States appears to be considerably smaller than in the East. For the most part, oil heating units in use in the Middle West, and Southwest were installed at a later date than those in the East. The ratio of primary (non-convertible) oil burners, is, therefore, much higher. This, however, does not mean that conversions, in the Central States should not be as extensive as possible. Wherever grates and lugs are available, conversions should be made, whether the oil burning units are located in the East or elsewhere.

Not all of the heaters that have grates and lugs available can be converted without difficulty. In some cases, the hot-water heating system is such that conversion would leave the home without a source of hot water. In other cases, invalids or aged persons occupying the house can hardly be expected to expend the energy required to hand-fire a coal furnace. [Editor's Note: Some PD-1A's have been approved where this argument is proved.] In some areas, coal itself may be scarce; conversion would merely exchange one shortage for another. Persons should be urged to

consult their coal dealer as to the availability of coal before converting, and to put in their supply of coal at the time the conversion is made.

Another difficulty involved is the shortage of labor. For this reason it is essential that most conversions be made before the burning season starts so that the individual jobs may be spaced over several months' time rather than attempted all at once with the start of cold weather. The estimated average time required to convert an oil burner to coal, including the most difficult jobs, is 5½ hours.

Are There Conversion Materials?

An average of several surveys broken down, reveals that 16% of the oil burning units can be converted without new equipment and 34% can be converted if grates or grates and lugs are provided; some parts of an additional 10% can be converted if hot water service is re-arranged or if the provision for coal stokers could surmount the difficulties of age or invalidism. About 25,000 domestic coal stokers are on hand in the East Coast area.

A study of the Civilian Supply Division of WPB indicates that considerable stocks of grates are available for conversion boilers provided lugs are in place or are replaceable. Potential production capacity for grates is estimated at about 1,400 per day. The materials needed include about 70% low-grade scrap and about 30% pig iron. For each 100,000 grates, about 1,630 tons of pig iron and 3,800 tons of scrap would be required.

Cost for Conversion

The cost of conversion to the household consumer depends upon the amount of equipment required and the difficulty of the conversion. The Buildings Material Price Branch of OPA estimates the cost of conversion when equipment is not required at \$10 or \$15 per unit.

There is a general agreement that the cost when equipment must be provided would range from \$30 to \$75. The Office of Petroleum Coordinator has adopted an informal ceiling of \$2 conversion cost per barrel of oil saved annually as the limit beyond which industrial conversion would be deemed too costly. This rule of thumb limit corresponds with a conversion cost of \$85 or \$90 for the average domestic installation.

B. SPACE HEATERS, COOKING STOVES, ETC.

Space heating units, cooking stoves, rural lighting, etc., are large factors in the total oil consumption of the area. The United States Bureau of Mines placed consumption of kerosene at 1,514,436,000 gallons for 1940, in the 17 Eastern states and the District of Columbia. This area accounted for 89% of all kerosene consumption in the United States. Also, the Eastern area consumed in 1940 an additional 71,904,000 gallons of No. 1 fuel oil. Taken together these light heating and lighting oils totalled 1,586,340,000 or roughly between 25% and 30% of all oil consumption in the Eastern area.

There are apparently no exact figures on the number of space heaters in existence. It is known, however, that in a large number of cases, conversions from oil to wood and coal, is relatively easy, at least in some degree. Many homes using oil space heaters, do not

(Continued on page 84)



War Housing Construction Standards

THE houses which the warm air heating industry will henceforth heat must conform to new standards of construction and equipment.

A new order, "War Housing Construction Standards," is now effective. Large and small housing projects are alike affected by the new standardization of design and materials. Builders whose plans fail to conform with the new standards will be denied priority assistance. Both publicly financed and privately financed houses are brought under the terms of the standards.

From the standpoint of the heating contractor the new standards are of interest because—(1) frame exteriors are prohibited except where masonry or substitutes are not obtainable; (2) floor areas are specified according to the number of bedrooms and the largest, single-story house can be only 900 square feet in area; (3) houses with less than 40,000 Btu heat loss can be heated only with a pipeless furnace or a space heater or a chimney furnace; (4) houses with a heat loss above 40,000 Btu can have a gravity distribution furnace or a space heater or a chimney furnace; (5) forced air furnaces can be used only in a basementless, three-bedroom unit or in any basementless, two-story unit.

Following are the pertinent sections of the new order:

EFFECTIVE as of the date of these standards, the War Production Board will not issue preference rating orders for new prefabricated or site constructed housing unless their construction complies with the provisions of the following paragraphs, and a minimum of critical materials and lumber is used, and will not extend the term of preference rating orders previously issued for housing projects except where (a) the preference rating order has been applied to the purchase of materials, or (b) prefabrication or construction of the project has started, or (c) the construction of the project complies with the standards outlined below:

1. Single-family detached units, whether for rent or for sale, shall be constructed only where the essential utilities are contiguous to the lot, except where other types of dwelling units clearly would require the use of a greater quantity of critical material. All other types of construction shall be located, insofar as possible, upon sites adjacent to existing utility lines.

2. All rental projects, whether of single-family detached, semi-detached, row or multi-family structures, shall be designed without regard to the future separation of a portion of the project, and with a minimum of critical materials in the plumbing, heating, and electrical layouts, and in the utility installations on the site.

3. All structures shall be laid-up masonry, or other lumber substitute exterior wall construction, except in those areas where masonry materials or labor are not obtainable. Laid-up masonry means walls or floors constructed of clay or concrete products such as brick,

structural clay tile, cement or concrete blocks, and cement brick. Any other method of construction permitted by the War Housing Critical List may be used, provided the total softwood lumber used for framing, sheathing, and siding does not exceed the following maximum allowances in board feet per square foot of floor area.*

FAMILY DWELLING UNITS

	1 or More Bedrooms	No Bedrooms	Dormitory Accommodations	Community Facilities†
1 Story	5.3	5.6	5.4	7.1
Structures Having More Than 1 Story	4.7	4.9	4.8	..

* Floor area shall be measured at each principal floor level to the outside face of exterior walls and to the center line of common walls.

† Community facilities include buildings or portions of buildings, exclusive of basement space, used for administrative recreation, or commercial purposes, including infirmary or dining facilities.

4. Floor area for family dwelling units shall not exceed the following maxima based on the number of bedrooms within the unit:

MAXIMUM ALLOWANCES IN SQUARE FEET

	No Bedrooms	1 Bedroom	2 Bedrooms	3 Bedrooms
1 Story	340	560	720	900
2 or More Story	420	680	800	960

5. All types of construction shall use a minimum of lumber. To meet this objective, the following requirements shall apply:

A. Designs shall be based on the use of the lowest suitable grades and most available grades and species of common lumber for framing which shall be so sized and spaced as to effect the most economical utilization of stock.

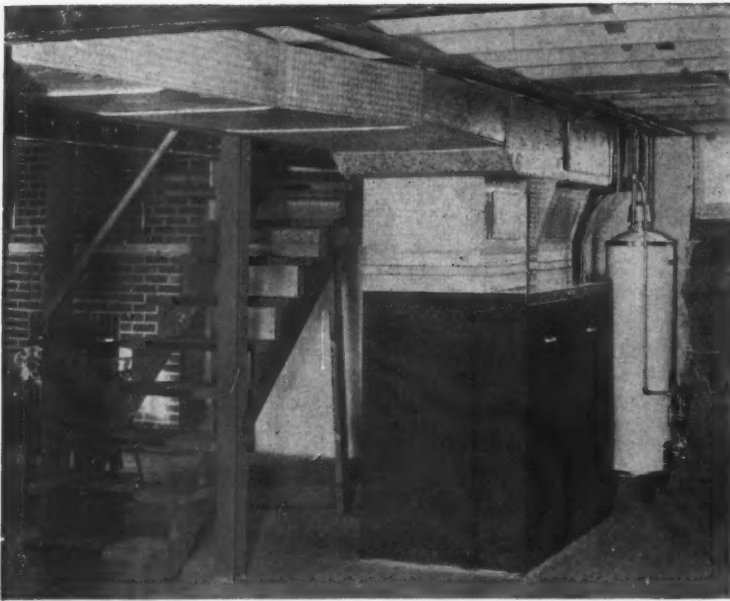
B. Designs shall be based on the use of standard sizes. All off-standard workings shall be avoided.

C. The lowest grade which is practicable for the purpose, and all available species which can serve the purpose, shall be specified.

D. The use of wood wall sheathing shall not be permitted when other materials such as fibre, insulation, and gypsum boards are obtainable.

E. The use of plywood, except for built-in fixtures and gusset plates, is prohibited in dwelling structures, the frames of which are fabricated at the site.

(Continued on page 75)



Typical installation of "Uniduct System" showing size of combination return air and warm air duct and special plenum.

A MOST interesting system for heating small homes, or for adding a forced warm air central system in old houses, the feature of which is the round warm air pipes within rectangular return air lines is shown in the photographs and drawings.

Developed and patented by Ernest F. Kluegel, Sr. and Jr. of St. Paul, Minnesota, and at present sold and installed by General Heating Products Company, also of St. Paul, this unusual idea has been proved in several scores of small homes in the Twin Cities area over the past several heating seasons.

The purpose of the idea is to save materials and labor time. Materials are saved because no carefully sized warm air main is required. Instead, 5, 6 or 7-inch round pipes with standard elbows are used to carry warm air. These warm air pipes are enclosed within the rectangular return air duct which may be a full metal trunk across joists or may be a panned span between joists. No rectangular fittings or transitions or takeoffs are required.

To install the system in a house requires the use of the special double register shown in a drawing. This register has two parts—warm

[*Defense House Heating*]

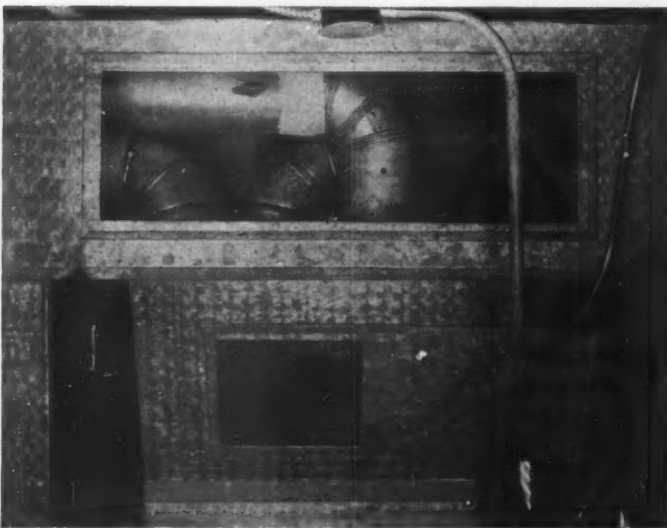
The Uniduct System

air issues from the top section while return air enters at the lower part of the register face. Since design usually is calculated on a register stack slightly over 3 inches deep some provision must be made to obtain more than the usual $3\frac{5}{8}$ inches of a partition. To get the depth, the special register head is slightly over 5 inches deep projecting into the room the depth of the special flange. This extra depth permits the return air to enter the rectangular duct below with the warm air register box at the back of the partition space (see register detail).

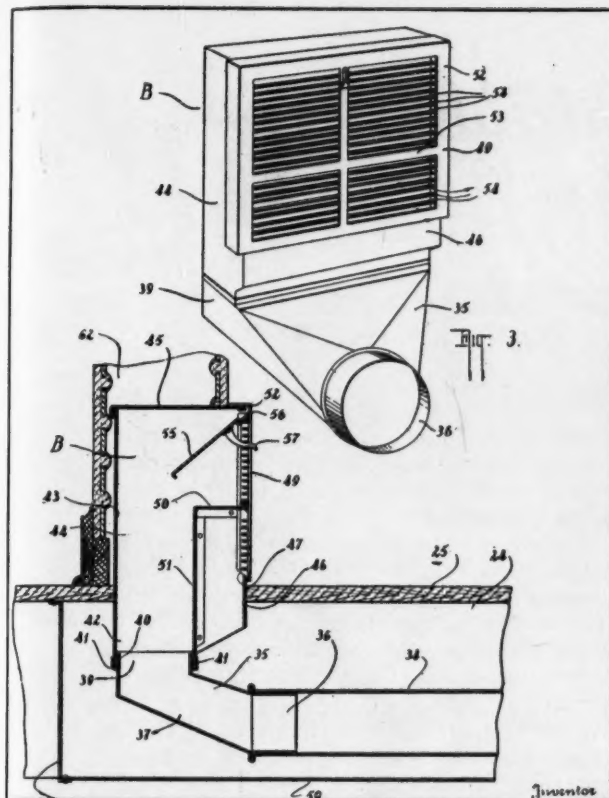
Another special feature is the plenum header which is a horizontal plate in the plenum with holes cut to take the 5, 6 or 7-inch round warm air pipes and keep the return air out of the warm air plenum. This shows in the plenum detail and one photograph of a plenum opened.

According to the contractors, the total installation costs are reduced by as much as 30 to 40 per cent. This is accomplished by eliminating all special fittings; also by the use of inexpensive round pipe and fittings; by the elimination of all discarded fittings and all layout work. Further reductions are made by reducing the number of openings nearly one-half. An average job can be installed with 15 to 18 man hours; this includes cutting holes and complete installation.

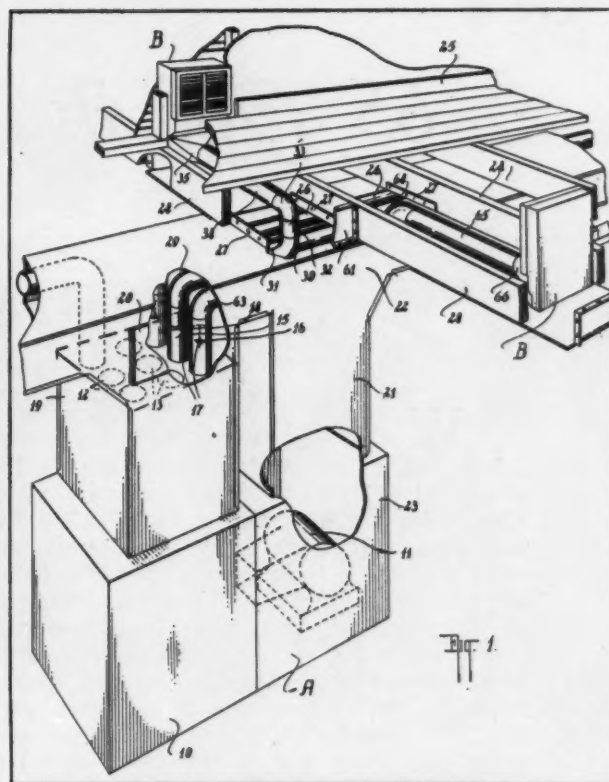
Just how much is saved is illustrated by the system shown in the photographs and floor plans where the total cost of the installation, exclusive



Photograph at left shows plenum opened with warm air pipes and header. Drawings on facing page show details of construction and floor plans of the house pictured above. Plans show how system is located to save duct materials.



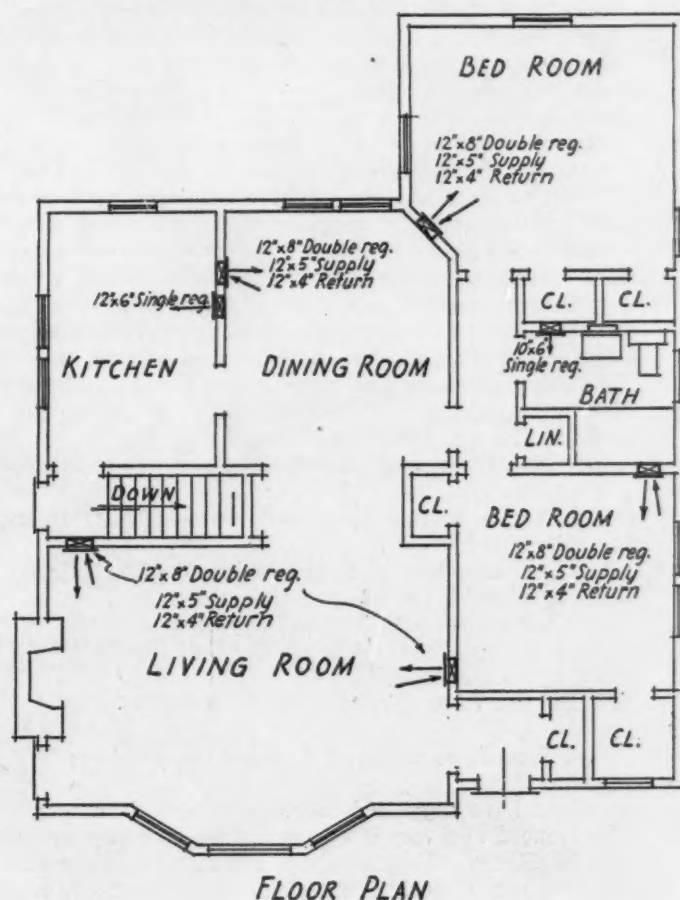
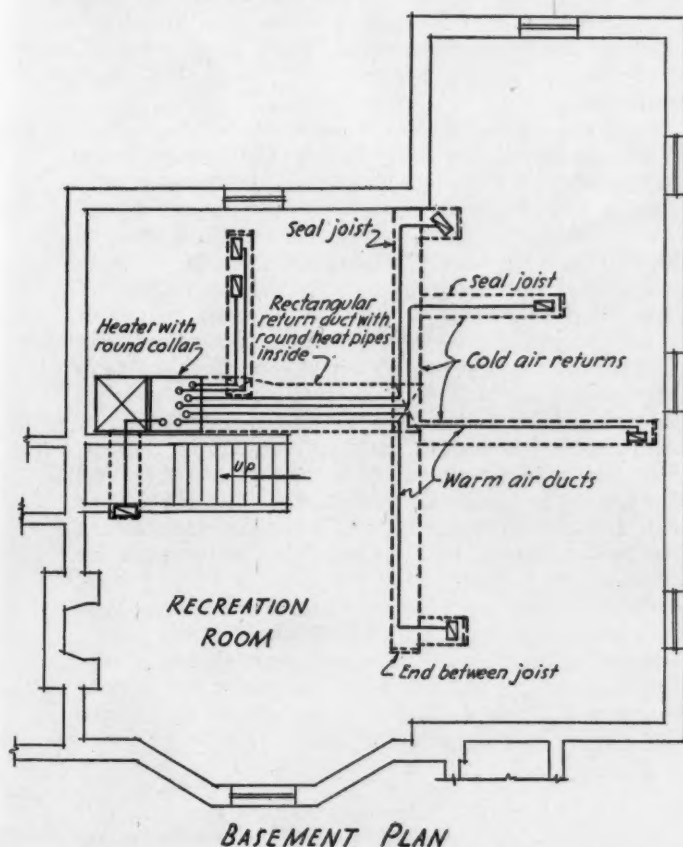
The Uniduct System requires a special "header" to separate the return air from the warm air in the plenum. Detail at right shows construction. A special double register is also required (see detail at left). Round pipes and fittings and cold air lines simplify construction.



of the furnace, was \$89.00. Customary installation was bid at \$150.00. Both bids were on \$1.25 per hour wage rate.

As readers of American Artisan well know, Minneapolis operates under a strict heating code. The Uniduct system meets code specifications. Further, the local FHA has Ok'd installations of the system although FHA cannot, of course, approve any patented system. The duct system has not been ruled "double wall pipe" which is prohibited in new house construction under the Critical Materials List.

Very much in keeping with the times, the plenum, the return duct, the panned joists can all easily be constructed of substitute materials or the duct can be substitute board and the plenum black iron. Using all substitute board for duct and plenum reduces the amount of metal required approximately 50 per cent.



65° Can Be Comfortable, If—

By Leverett D. Bristol, M. D.,

Member, Fuel Oil Rationing Advisory Panel

WHAT may be considered a safe *minimum* indoor temperature during winter months from the standpoint of health? In the past we have erred in maintaining too high temperatures and too dry atmospheres, particularly in private homes and apartment houses. It is necessary, therefore, in our fuel and health conservation program to indicate to the public, particularly those people who have been prodigal in the use of fuel oil, that temperatures must be kept down. However, we do not wish to err at the other extreme of causing such a temperature reduction that severe chilling and possible sickness may result. Although most of our winter ills, such as the common cold, influenza, bronchitis, and pneumonia, are due to bacterial and virus infections, scientific evidence is accumulating to show the important relationship of lowered resistance and changes in weather to these conditions.

After believing for generations that ventilation was a chemical problem involving poisonous gases and too little oxygen or too much carbon dioxide, we have now returned to the ideas of the ancients that the problem is chiefly physical and has to do largely with air movement, temperature and moisture content. Moreover, ventilation is not so much a matter of what we breathe in through our lungs as it is of how the skin and body react. Clean air of a chemical composition within reasonably normal limits, is necessary for satisfactory ventilation, but it is more important to ventilate for the heat regulating mechanism of the body.

Just as an *ideal* temperature, *irrespective of humidity and air motion*, does not exist, so also a *safe minimum* temperature does not exist without these other influencing factors. However, opinions recently gathered from medical and public health authorities of the United States, preliminary to the preparation of this report, suggest that the following, without regard to other factors, may be considered minimum for emergency requirements of fuel oil rationing with the kind of clothing and humidification now used:

- (a) For the average private home—60-68 (Majority opinion 65).
- (b) For the average apartment house—60-68 (Majority opinion 65*).
- (c) For hospitals and sanatoria—68-80 (Majority opinion 70 except operating rooms 80).
- (d) For schools—60-70 (Majority opinion 65*).
- (e) For department stores, office buildings, etc.—60-68 (Majority opinion 65*).

*Subject to local regulations or codes.

Procedures to Offset Reduced Temperatures

Some have suggested that department stores might be reduced to a very low temperature (possibly as low as 50° F. dry-bulb) except for office spaces, since customers are properly dressed for outside weather and

clerks are fairly active and can dress appropriately.

For general hospital wards a minimum temperature of 65° F. may be satisfactory where patients remain in bed or if ambulatory patients are provided with a 70° lounging room. Operating rooms and nurseries require higher temperatures.

In the hospital or sanatorium treatment of tuberculosis, authorities do not feel that reasonably low temperatures (from 60°-65°) are in any way harmful, although they usually prefer 65°-72°. It is agreed, however, that the very low temperatures once advocated have no special merit in treatment. It is believed, in general, that high temperatures (over 70°) are not necessary and temperatures running to 75° or over may be definitely undesirable.

Thermostats in all locations should be properly adjusted and reconditioned, if necessary. The thermostat should be supervised and manipulated by one person, as far as possible, rather than by several different persons. Simple, daily records of indoor temperatures both day and night should be kept by householders for more intelligent control of heating.

1. Insulation, Weather Stripping and Humidification

Reduction of room temperature may be a relatively small item in saving fuel. Yet a lowering from 72° to 65° may decrease fuel consumption by as much as 10-20 per cent. However, proper insulation of walls and attic floors and the use of storm sash and doors may cut down fuel needs by as much as 60 per cent. Every effort should be made to accomplish such insulation.

Generally speaking, ventilation in the average place of work is more satisfactory than in the average home, or apartment house since the latter are often greatly overheated. While mechanical air conditioning may not be feasible for the average home, much may be done to improve conditions for members of a household. The chief fault in most homes is the lack of proper indoor humidity. The air of rooms in winter is generally overdry, with resultant discomfort, and predisposition to various abnormal conditions, particularly of the respiratory tract. Reducing somewhat the temperature in the home simplifies the problem of maintaining the proper moisture content in the air. Also, properly humidified air is comfortable at several degrees lower temperature than dry air. At 65° or less, artificial humidification is generally unnecessary because laundering, bathing and living activities result in adequate humidity for normally healthy people. Artificial humidification need be undertaken only upon the specific suggestion of a physician.

So far as possible, windows and doors should be kept closed, except for minimal essential ventilation. Drafts should be controlled, as cold is better borne when the

(Continued on page 73)

WE'RE IN IT - LET'S WIN IT!

WHETHER we're the man behind the gun, or the man behind the man behind the gun, we have our definite job cut out for us, a job that must be done without delay, to win this war.

Our experienced furnace builders have been trained in the manufacture of war products that have no connection with heating equipment. Different kinds of dies, tools, and jigs installed in the machines, presses and equipment of the furnace industry's most modern plant, are turning out weapons that will help turn the tide of war.

The conversion, expansion and re-tooling of our plant has gone forward so that more products can

be produced than in the past—so that Defense Housing Units and Barracks Heaters can be manufactured, if the U. S. Government desires, without retarding the production of other equipment more directly needed for the winning of the war.

We are justly proud of our honor plaque which bears the names of many trained men with long years of experience in the manufacture and production of heating and air conditioning equipment. Additional names are constantly being added. We have the continuing responsibility of training new faces—to be the man behind the man behind the gun.

BUY MORE WAR BONDS AND STAMPS

Luxaire

**Warm Air Furnaces
Air Conditioning Units
Coal—Gas—Oil**

THE C. A. OLSEN MFG. CO. ELYRIA, OHIO

The Controlled Materials Plan

How
Materials
Flow

REQUIREMENTS

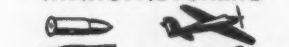
SUBCONTRACTORS
AND SUPPLIERS



BILLS OF MATERIALS



MANUFACTURERS



BILLS OF MATERIALS



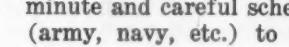
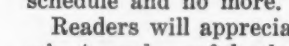
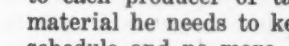
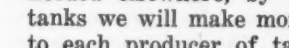
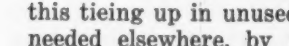
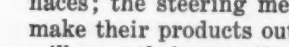
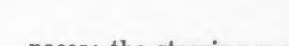
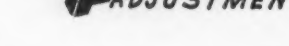
CLAIMANT AGENCIES



ARMY, NAVY ETC.



W.P.B.



IN THE November issue, page 32, Arnold Kruckman gave readers a pre-view of the new Controlled Materials Plan. He explained that this program has been inaugurated because Priorities have not worked out completely as intended with the result that critical material shortages have become acute because industry has produced much more of some things than we shall be able to use in months. While we wait for other producers to catch up to these ahead-of-schedule producers, the materials which might have been used elsewhere, remain unused in ahead-of-schedule products.

An example which illustrates how far Priorities has gone akilter is—producers of some parts (say tank steering mechanisms) have produced all the mechanisms required until June of 1943. But they still go ahead turning out more steering mechanisms. Meanwhile the rest of the tank parts are behind. The materials used in these mechanisms might very well be given the furnace manufacturers for fur-

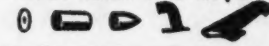
naces; the steering mechanism folks can just as well make their products out of materials coming from the mills month by month.

The Controlled Materials Plan is intended to stop this tying up in unused inventory of materials sorely needed elsewhere, by starting with the number of tanks we will make month by month and then giving to each producer of tank parts just the amount of material he needs to keep up with the complete tank schedule and no more.

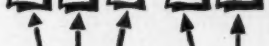
Readers will appreciate that this new plan requires minute and careful scheduling from the ultimate user (army, navy, etc.) to the last part producer. The

ALLOTMENTS

SUBCONTRACTORS
AND SUPPLIERS



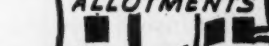
ALLOTMENTS



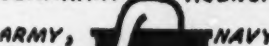
MANUFACTURERS



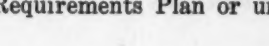
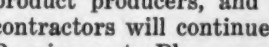
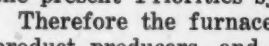
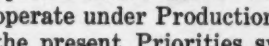
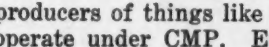
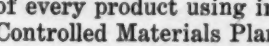
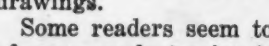
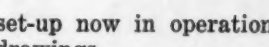
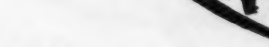
ALLOTMENTS



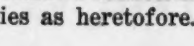
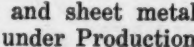
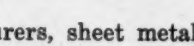
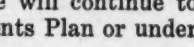
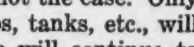
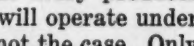
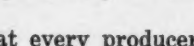
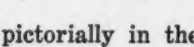
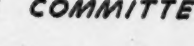
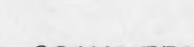
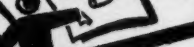
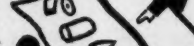
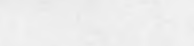
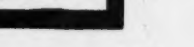
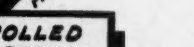
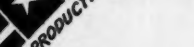
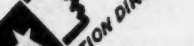
CLAIMANT



ARMY, NAVY ETC.



CONTROLLED
MATERIALS
PRODUCER



• REQUIREMENTS COMMITTEE •

set-up now in operation is shown pictorially in the drawings.

Some readers seem to believe that every producer of every product using iron or steel will operate under Controlled Materials Plan. Such is not the case. Only producers of things like planes, ships, tanks, etc., will operate under CMP. Everyone else will continue to operate under Production Requirements Plan or under the present Priorities system.

Therefore the furnace manufacturers, sheet metal product producers, and all furnace and sheet metal contractors will continue to operate under Production Requirements Plan or under priorities as heretofore.

Following is the government's explanation of Controlled Materials Plan:

The new, long-range plan for controlling the flow of critical materials into war production—the Controlled Materials Plan—has resulted from study of difficulties encountered in distributing essential materials through the priorities system, including the Production Requirements Plan, under which our war industries have been operating.

Under PRP every firm, large or small, submitted to the War Production Board its individual requirements and received WPB individual authorization to obtain materials. These requirements were on a priority basis, but even with a high priority rating the manufacturer could not be sure he would get enough materials of the right kind he needed at the time he needed them.

The Controlled Materials Plan, like a modern irrigation system, will be based on knowledge of materials requirements all the way down the line, from prime contractors to subcontractors, and on a measured control of the flow of these materials from the "headgate" or national pool of critical materials down to the last channels and outlets of war industries.

Under the CMP, prime contractors assemble "Bills of Materials" specifying not only what materials are required, but when they must be received in order to meet approved production schedules on time. Included in the Bills of Materials are those materials needed by the prime contractors as well as subcontractors and their suppliers. Each prime contractor submits his total Bill of Materials to his particular "claimant agency." There are seven claimant agencies—Army, Navy, Maritime Commission, aircraft scheduling unit, Board of Economic Warfare, and office of civilian supply—which handle orders for their respective customers. Each claimant agency assembles its Bills of

Materials and submits them to the WPB requirements committee and to the respective controlled materials divisions.

The requirements thus presented by the claimant agencies must be bought into balance with the known available supply before they can be approved. All material requirements are divided into amounts needed for construction and facilities, including industrial machinery and equipment; production; and maintenance, repair and operating supplies. When the sum of these various requirements has been adjusted to the supply, the WPB program vice chairman—who is also chairman of the requirements committee—with the advice of his committee will allocate authorized quantities of "Controlled Materials" to each claimant agency.

WPB Tells Mills What to Produce

The claimant agencies, in turn, distribute these broad allotments among their prime contractors by means of "allotment numbers," and prime contractors then pass on the allotment numbers to subcontractors, as they are needed to secure supplies. Allotment numbers constitute "certified checks" for specific amounts of material for delivery during specific periods. They are presented to mills with contractors' orders. Mills are advised by WPB as to the amount, size, and form of materials they should produce in order to meet the demand.

Carbon and alloy steel, copper, and aluminum are the first Controlled Materials to come under the plan, which will be put into effect partially in the second quarter of 1943 and completely by July 1. Materials other than Controlled Materials will continue to be distributed through the priority system. Provision is made for companies to continue getting steel, copper, and aluminum under the existing priorities system and PRP until they qualify under CMP.

The "Wage Freeze" Order—No. 9250

SALARIES and wages were "frozen" by the Executive Order No. 9250 of October 3; briefly as follows—(1) adjustments in wages can be made after October 3 and in salaries after October 27 only with permission of National War Labor Board; (2) employers of less than 8 mechanics are exempt from the order; (3) firms doing war work and firms not doing war work are alike included; (4) you can't "fudge" a wage change by "bonuses," "gifts," "bonds," etc.; (5) you can't reduce wages or piece work rates.

A confusing section related to "bona fide executive, administrative or professional" capacity. War Labor Board has now adopted the definition used by the Wages and Hours Division. Therefore, anyone on your payroll classified as "executive" under Wages and Hours rulings is also an "executive" under the new wage stabilization order.

To administer the order, local area offices are being opened up in many cities. No list has been released as yet—you will hear about your local office from the newspapers or you can get the address from Wages and Hours Office of Department of Internal Revenue.

The problem of wage or salary increases and de-

creases, in cases covered by employees coming under the act are indicated in the following two sections.

Sec. 4010.7. Salary increases.—In the case of a salary rate of \$5,000 or less per annum existing on the date of the approval of these regulations by the President and in the case of a salary rate of more than \$5,000 per annum existing on October 3, 1942, no increase shall be made by the employer except as provided in regulations, rulings, or orders promulgated under the authority of these regulations. Except as herein provided, any increase made after such respective dates shall be made by the employer except as provided in regulations, rulings, or orders promulgated under the authority of those regulations. Except as herein provided, any increase made after such respective dates shall be considered in contravention of the Act and the Regulations, Rulings, or orders promulgated thereunder from the date of the payment if such increase is made prior to the approval of the Board or the Commissioner, as the case may be.

In the case, however, of an increase made in accordance with the terms of a salary agreement or salary rate schedule and as a result of

- (a) individual promotions or reclassifications,
- (b) individual merit increases within established salary rate ranges,

- (c) operation of an established plan of salary increases based on length of service,
- (d) increased productivity under incentive plans,
- (e) operations of a trainee system, or
- (f) such other reasons or circumstances as may be prescribed in orders, rulings, or regulations, promulgated under the authority of those regulations,

no prior approval of the Board or the Commissioner is required. No such increase shall result in any substantial increase of the level of costs or shall furnish the basis either to increase price ceilings of the commodity or service involved or to resist otherwise justifiable reductions in such price ceilings.

Sec. 4010.8. Decreases in salaries of less than \$5,000.—In the case of a salary rate existing as of the close of October 3, 1942, under which an employee is paid a salary of less than \$5,000 per annum for any particular work, no decrease shall be made by the employer below the highest salary rate paid for such work between January 1, 1942, and September 15, 1942, unless to correct gross inequities or to aid in the effective prosecution of the war. Any

decrease in such salary rate after October 3, 1942, shall be considered in contravention of the Act and the regulations, rulings, or orders promulgated thereunder if such decrease is made prior to the approval of the Board or the Commissioner, as the case may be.

Sec. 4010.9. Decreases in salaries of over \$5,000.—In the case of a salary rate existing as of the close of October 3, 1942, under which an employee is paid a salary of \$5,000 or more per annum, no decrease in such rate made by the employer shall be considered in contravention of the Act and the regulations promulgated thereunder (see section 5(b) of the Act); provided, however, that if by virtue of such decrease the new salary paid to the employee is less than \$5,000 per annum, then the validity of such decrease below \$5,000 shall be determined under the provisions of section 4010.8 of these regulations.

We assume that every employer covered by the act has received all the necessary forms, information, and procedure bulletins. Following are some typical questions and answers which may be of help to employers not within telephone reach of a War Board office.

Wage Law Questions and Answers

Q. Under what conditions will the War Labor Board approve increases?

A. To "correct maladjustments or inequalities, to eliminate substandards of living, to correct gross inequities, or to aid in the effective prosecution of the war."

Q. Are all employers covered by these requirements?

A. No; employers who have *eight or less* workers may make increases without approval of the War Labor Board.

Q. Is an employer exempt if he has a number of establishments, each of which employs eight or less persons?

A. No. If the total number of persons in all of his establishments is more than eight, then he is not exempt.

Q. Can an employer allow these individual increases to raise his costs and cause his prices to go up?

A. No. No employer will be allowed by the Government to use these increases either to get a price increase or to resist an otherwise justifiable reduction in his price ceiling.

Q. What about piece rates? Suppose an employer set a piece rate before or after October 3 which, when tried out in practice, did not give the employees the normal earnings prevailing in that plant for that type of job. Can he adjust this rate so as to yield the normal and expected amount?

A. Yes.

Q. The Executive Order of October 3 states that there shall be "no increases in wage rates" unless they are approved by the WLB. Can an employer get around this by hiring a new worker at higher wages than he is paying his present employees?

A. No; he cannot hire a new worker at more than the established rate in the plant for the job.

Q. What about increases in wage rates granted before October 3?

A. Unless the WLB later decides to review them, all wage increases put into effect on or before October 3 do not need WLB approval. Such increases must have been agreed to in writing or formally communicated to the employees on or before October 3. They must also have

been made applicable to work done prior to October 3.

Q. What about increases in wage rates which were agreed to before October 3, but which do not go into effect until some future date? Do they need WLB approval?

A. Yes, if they are payment for work done after October 3. The typical case is that of a contract made before October 3 providing that at some future date the workers will be granted an automatic increase tied to the increase in the cost of living which has occurred in the meantime. Such future increases must be approved by the WLB. This is also true of arbitration awards handed down after October 3, even if the agreement to arbitrate was made before that date.

Q. Does an employer who is not engaged in war production have to submit wage and salary increases to the WLB for approval?

A. Yes. There is no distinction made in the Executive Order between war work and non-war work.

Q. If wage or salary increases are made in the form of war bonds or stamps, do these increases need to be approved by the WLB?

A. Yes. It makes no difference whether the increases are granted in cash or in war bonds or stamps or any form of remuneration whatsoever.

Q. What is the difference between wages and salaries?

A. The term "salary" means all forms of compensation computed on a weekly, monthly, annual or other comparable basis, except a wage basis. The term "wages" means all forms of compensation computed on an hourly, daily, piece-work or other comparable basis.

Q. Are bonuses, gifts, loans, fees and commissions, when given as compensation for personal services, included in wages and salaries?

A. Yes.

Q. Can wages or salaries be decreased?

A. No decreases in wages or salaries for any particular work may be made below the highest rate paid for this work between January 1 and September 15, 1942 without approval by WLB.

If you haven't cleaned up your shop to get all possible scrap into steel producing channels, do so now. The scrap appeal has been answered by industry beyond expectation, but every bit of scrap is needed. So, if you've been too busy this fall to clean house do so now — your scrap will still be collected.

M-126, Amended, Stops Production of—

Registers and Grilles, Gas Furnaces, Oil Furnaces, Humidifiers But Permits Production for Maintenance and Repair

THE basic order controlling iron and steel conservation—M-126—has again been amended (November 21) and contains two major changes of great importance to our industry.

First, the amendment permits manufacture of products for repair and maintenance of plumbing and heating equipment. Gutter and downspout for small dwellings is also permitted (25 pounds per structure) under the amendment—repair and maintenance only, not new usage.

The amended M-126 also adds to Lists A, C, S some items which heretofore were not included. For our industry, registers and grilles can no longer be manufactured; neither may gas conversion burners, gas-fired boiler-burner units, gas-fired furnace-burner units, oil-fired boiler-burner units, oil-fired furnace-burner units, humidification devices (except for hospital use).

There are also many items and products usually made of iron and steel which may no longer be manufactured in iron, steel or stainless steel. Readers who are making products should write for a copy of Conservation Order M-126 as Amended November 21—address your area WPB office.

Certain sections of the amended order are reproduced following:

PART 1176—IRON AND STEEL CONSERVATION [Conservation Order M-126 as Amended November 21, 1942]

§ 1176.1 *General Conservation Order M-126* — (a) *Definitions.* For the purpose of this order:

(3) The terms "iron" and "steel" shall not be deemed to include screws, nails, rivets, bolts, or wire, strapping or small hardware for joining or other similar essential purposes.

(4) The term "stainless steel" means corrosion or heat resistant alloy iron or alloy steel containing 10 per cent or more of chromium with or without nickel and/or other alloying elements.

(5) "Process" means cut, draw, machine, stamp, melt, cast, forge, roll, turn, spin or otherwise shape.

(6) "Put into process" means the first change by a manufacturer in the form of material from that form in which it is received by him.

(7) The term "assemble" shall not be deemed to include the putting together of an article after delivery to a sales outlet or consumer in knockdown form pursuant to an established custom. The term "assemble" shall also not be deemed to include adding finished parts to an otherwise finished article when the placing of one or more finished parts or the size or type of

one or more finished parts is determined by the use to which the ultimate consumer is to put the article.

(b) *Restrictions with respect to List A products.* Except as provided in paragraph (d):

(1) *Raw material deliveries.* From and after the applicable governing date of any item on List A, no person shall deliver or accept delivery of any iron or steel which he knows or has reason to know will be used to make such item, or any part thereof.

(2) *Fabrication—(i) Limitation.* During the 30 days next following the applicable governing date of any item on List A, no person shall put into process any iron or steel to make such item, or any part thereof, in an aggregate weight greater than 75 per cent of the average monthly weight of all metals put into process by him during 1941 in the making of such item and parts, and no person shall put into process any iron or steel in the making of any such item or part unless processing thereof will be completed within such 30 day period.

(ii) *Prohibition.* From and after the date 30 days after the applicable governing date of any item on List A, no person shall process any iron or steel to make such item, or any part thereof.

(3) *Assembly.* From and after the date 60 days after the applicable governing date of any item on List A, no person shall assemble such item, or any part thereof, containing any iron or steel.

(4) *List A products without governing dates.* With respect to any item on List A without a governing date, (i) no person shall deliver or accept delivery of any iron or steel which he knows or has reason to know will be used to make such item, or any part thereof, (ii) no person shall put into process or process any iron or steel to make such item, or any part thereof, and (iii) no person shall assemble such item, or any part thereof, containing any iron or steel.

(e) *Restrictions with respect to other products—(1) Roofing and siding.* No person shall manufacture any iron or steel into roofing and siding except:

(i) For delivery to or for the account of the Army and Navy of the United States, the United States Maritime Commission, the War Shipping Administration, the Panama Canal, the Coast and Geodetic Survey, the Coast Guard, the Civil Aeronautics Authority, the National Advisory Committee for Aeronautics, the Office of Scientific Research and Development; or

(ii) For delivery on a preference rating of AA-5 or higher assigned by a PD-3A preference rating certificate or by a preference rating in the P-19 series; or

(iii) For defense housing, to the extent specified in the Defense Housing Critical List; or

(vi) For delivery to an ultimate purchaser for maintenance and repair purposes regardless of rating. With respect to this paragraph (e) (1) (vi), no per-

son may manufacture from May 5, 1942 to December 31, 1942 more than 20 per cent of the roofing and siding made by him from iron or steel during the calendar year 1940; or in the calendar year 1943 or any subsequent calendar year, more than 25 per cent of the roofing and siding made by him from iron or steel, during the calendar year 1940.

(2) *Other products.* No person shall use any iron or steel to make any article not prohibited on List A, or any part thereof, where and to the extent that the use of other material (excluding material on List D) is practicable. Alloy steel shall not be used when the use of carbon steel is practicable and no more iron or steel shall be used in connection with the manufacture of any such article than is essential. The provisions of this paragraph (e) (2) shall not apply in the case of articles or parts to be purchased by or for the account of the Army or Navy of the United States, the United States Maritime Commission or the War Shipping Administration, or to be physically incorporated into products to be so purchased to the extent that the use of iron or steel is required by the specifications (including performance specifications) of the Army or Navy of the United States, the United States Maritime Commission or the War Shipping Administration applicable to the contract, subcontract or purchase order.

(g) *Disposition of frozen and excessive inventories.* The disposition of frozen and excessive inventories containing iron or steel shall be subject to the applicable provisions of Priorities Regulation No. 13 (§ 944.34).

(h) *Miscellaneous provisions—(1) Applicability of priorities regulations.* This order and all transactions affected thereby are subject to all applicable provisions of the Priorities Regulations of the War Production Board, as amended from time to time.

(3) *Applicability of order.* The prohibitions and restrictions contained in this order shall apply whether the items are ordered or manufactured pursuant to a contract made prior to, on, or subsequent to May 5, 1942, or pursuant to a contract supported by a preference rating. Insofar as any other order of the Director General for Operations may have the effect of limiting or curtailing to a greater extent than herein provided the use of any material in the production of any item, the limitations of such order shall be observed.

(7) *Repair.* The restrictions of this order (other than those contained in paragraph (e) (2) shall not apply to a person repairing a used article on or off the premises of the owner, if the person making the repair does not use iron or steel weighing in the aggregate more than 25 pounds and if any putting into process, processing or assembling done by such person is for the purpose of making the specific repair. The limitations in this paragraph (h) (7) on repairing a used article shall not apply to any item on List A or List S, or part thereof, to the extent that maintenance and repair of such item is specifically excepted on List A or List S.

Issued this 21st day of November, 1942.

ERNEST KANZLER,
Director General for Operations.

Your Eligibility for Tires

MOST readers understand, we believe, that WPB allocates a certain number of new, recapped and retreaded tires monthly to OPA which, in turn, divides this quota among the states based upon adjusted car and truck registration. Then the State Director divides the state quota among the local rationing boards.

In our industry a problem has arisen—convincing the local rationing board that the contractor's truck is eligible for new, recapped or retreaded tires or for tires for passenger cars used in the business.

The eligibility of a contractor for new, recapped or retreaded tires is established by the following sections from "Tire Rationing Regulations (Revised)":

Sec. 405. Eligibility Classification—List A.—Certificates authorizing the purchase or acceptance of delivery of tires or tubes may be granted, but only to the extent provided in sections 401 to 404 and otherwise provided in these regulations, to equip vehicles listed in this section which contains List A of the eligibility classification: * * * *

(f) A truck operated exclusively for one or more of the purposes stated in the preceding sections or for one or more of the following purposes: * * * *

(2) Transportation of materials and equipment for construction or for mechanical, structural, or highway maintenance or repair.

(i) Certificates may be issued under this paragraph (f) (2) for trucks used to carry material equipment for any construction project,

including the construction of factories, houses, roads, dams and other facilities, or structural maintenance and repair, including electrical, plumbing, or heating repairs to the structure of such buildings or facilities, or maintenance of machines in them * * * *

If contractors are using a passenger car exclusively for business, use the eligibility as indicated by the following:

Sec. 501. Eligibility of List B passenger automobiles for retreaded or recapped tires.

(a) The Board may issue a certificate authorizing the holder to accept delivery of retreaded or recapped tires for a passenger automobile or to obtain retreading or recapping services for a tire for a passenger automobile to an applicant who meets the requirements of subsections (b), (c), and (d) of this section. * * * *

(c) That public transportation will not enable him to do his work because of the necessity of carrying material and equipment * * * *

Another problem posed by some local rationing boards has been "proof" of the "essential need" for tires. This is indicated by:

Sec. 504. Eligibility Classification—List B.—Certificates authorizing the purchase or acceptance of delivery of tires may be granted, but only to the extent provided in sections 501 to 503 and otherwise provided in these regulations, to equip vehicles listed in this section, which contains List B

(Continued on page 76)

AMERICAN ARTISAN

SHEET METAL

SECTION



DEVOTED TO SHEET METAL CONTRACTING AND FABRICATING

Giving your customers maintenance tips like these

BE GLAD IT'S STEEL...IT LASTS LONGER



- IF THERE IS A MOTOR-DRIVEN** air conditioning system, these simple precautions will help you keep it in good condition. Be sure to clean or replace filters frequently. Check the motor fan monthly. And have the motor oil

During War Bonds is not only a poster's privilege. It is mine as well as mine for the future. For these War Bonds you can have now, one day in your own beating plant. And what a beating plant it will be! A modern air-conditioning system with fans, ducts and tubes of 1/2 inch inside, back from the wars and working for your present-time comfort again. This is better steel, best designed for wartime research.

CARBON-CLIMAX STEEL CORPORATION, Pittsburgh - Carnegie Company, San Francisco - THOMAS CRAL-LOWE & Co. Birmingham - United States Steel Export Company, New York - Republic Company, Chicago, Wisconsin (East)

ready for winter

HERE'S SOMETHING you can do to help America's war effort. Take good care of your house! Especially its metal parts, and the metal equipment you use in its upkeep... because by making them last longer, you're saving vital steel for the war. Is your house ready for the winter? Check up on it now... before cold weather catches up with you. Check the suggestions on this page... and act!



- DO THESE THINGS, NOW!**
1. If the wind has loosened shell roofing, have it nailed tight immediately to give permanent sealing. And if it's raining, seal the leaks with roofing cement.
 2. Keep metal locks piled for longer life and better performance.
 3. Have your heating equipment checked up on your heating season. Keep it in top shape, guarantee its performance for the next winter. New heat exchangers really clean.
 4. When you put away your furnace, coat metal parts with a thin coat of oil to prevent rust.
 5. Paint your airbrakes, can inside and out to protect in against acid rain and weather.
 6. Paint your exhaust and vent pipes with weather-resistant paint to keep for winter. Various options are being marketed.
 7. If metal railings, trim fences or grilles are rusty, remove them with wire brush and paint with rust inhibitor. Do not forget to remove paint.

Buying War Bonds is not only a way to help win the war, it's an investment for the future. The War Bonds you buy now can some day be used to finance

Your present home or to build a new one that will have all the modern conveniences you've dreamed of. Remember that T-88 Steel, which is fighting the Axis today, will be home from the war again sometime... to give you a finer, more livable home. And they'll be better streets... improved by wartime research.

CARNEGIE STEEL CORPORATION, Pittsburgh - Chicago - COLUMBIA STEEL COMPANY, San Francisco - TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham - United States Steel Export Company, New York - *Special Steel Products Company, Chicago, Warehouse Distributors.*











WIRE CUTTING AND DOWNPOUTS. Get rid of the debris that interferes with proper drainage. Cover downspout openings with wire mesh to keep them clear of rubbish. Where repairs are needed, call in your local sheet metal man to put them in shape.

TAKE CARE OF YOUR CABBINETS. With a little attention they'll serve you faithfully for life. Whenever moisture or vermin threaten deterioration, clean with a wire brush, paint with red lead followed with a good house paint. Caulk joints between frame and house.



You'll see the U.S.S. Label again when the war is over — when manufacturers will again use this label as their symbol of quality on their steel products for peace.

**UNITED
STATES
STEEL**

-  **"CHECK FURNACE JOINTS, PIPE CONNECTIONS.** Have the jacket of your furnace removed occasionally and make sure all joints are tight . . . "
-  **"Keep seams of ductwork tight."**
-  **"Check asbestos insulation of warm-air pipes."**
-  **"Consult your heating man on the proper type of fuel to burn in your furnace."**
-  **"Call in a heating contractor to make a check-up."**
-  **"Where repairs are needed (in gutters and downspouts), call in your local sheet-metal man to put them in shape."**
-  **"If the wind has loosened steel roofing, have it nailed tight . . . "**
-  **"Have your heating contractor check up on your heating system . . . keep it in top-notch condition to conserve fuel for the war industries."**

WITH steel enlisted full-strength in the war, most home construction and improvement jobs involving steel will have to wait. But we who make steel and you men who fabricate it have a joint responsibility to the millions of American home-owners who depend on us for sound roofing, efficient heating systems and many other comforts. We can still help them keep their homes in the best possible shape until victory releases steel for new construction and necessary replacements.

As part of our wartime job, we at United States Steel are using our advertising in the Saturday Evening Post and

other popular magazines—over 15 million copies in all—to pass on helpful maintenance hints to home-owners. Many of these tips refer to your services. Through skillful maintenance service, you can help your country conserve materials, and at the same time keep the confidence of your customers. We'll gladly do everything possible to help you carry on with this important job, until U·S·S Steel Sheets are freely available again.

If you haven't seen the two advertisements illustrated above and would like to have copies, write us and we'll send you a reprint of each.

U·S·S STEEL SHEETS

CARNEGIE-ILLINOIS STEEL CORPORATION, *Pittsburgh and Chicago*
COLUMBIA STEEL COMPANY, *San Francisco*
TENNESSEE COAL, IRON & RAILROAD COMPANY, *Birmingham*

Scully Steel Products Company, Chicago, Warehouse Distributors
United States Steel Export Company, New York



UNITED STATES STEEL

War Work for Small Sheet Metal Plants

From time to time during the past year we have presented reports on WPB's efforts to spread war work through sub-contracting; by assigning work to idle plants and areas; by breaking up prime contracts. Following is WPB's latest effort — just getting under way — but perhaps holding some hope for our industry if contractors will make and maintain contact with the offices listed below.

IN the November issue, page 31, under the title "Help for Little Firms" was briefly announced WPB's latest scheme for distributing war work among small, needful plants. A number of readers requested additional information. Following is the plan as announced by Frank Smith, Deputy Director of the smaller War Plants Division of WPB.

"The first step is for us to find out what the future requirements are as soon as they are determined by the planners of production.

"Our men, under Mr. O. S. McPherson, Chief of our Agencies Contact Branch, working with the officers assigned to select items suitable for us, carefully check over these specifications and together decide on the jobs we are to tackle.

"These requirement items are then brought back to our own offices for examination by a committee under the chairmanship of Robert Graham. The committee is composed of engineers from the Facilities and Plant Services Branches and one or more of our contact men. It meets every day and decides finally which items we shall work on and where we are most likely to find the best facilities.

"This group is pretty familiar with the situation in smaller plants throughout the country and also has before it a good deal of information as to plants that are desperately in need of work. Other things being equal we try to place work where the distress is greatest.

"After this preliminary examination, which sifts out the jobs we know we can handle, the Plant Service Branch goes to work to break down the jobs and designate specific plants to do them. This necessitates direct contact through our field engineers with the plants chosen.

"From what we know of a given plant's equipment and ability we conclude that the plant can handle the job, but we don't stop there. We have one of our field men discuss the job with the managers and production men in the plant. If this close examination shows that we have chosen the right plants, we are then ready to make our specific recommendation to the procurement officer who will place the order.

"When this stage is reached we may ask the owner or manager of the plant to come to Washington, if the contract is to be placed here. But in many instances contracts are let in the field and the whole business is arranged by our field representatives and the procurement officers.

"When the order is placed in accordance with our recommendations, our engineers in the field follow up closely with engineering advice and assistance to make sure that the job is properly done and delivered on time."

Thirty-nine prime contracts, totaling 16 million dollars, had been awarded up to November 13th. The number of plants getting work on subcontracting from these thirty-nine prime contractors is not yet known, except in the case of four contracts. Three of these are of the "mother hen" type (a prime contractor with numerous designated sub-contractors), and one is a pool (an association of small firms holding a prime contract). In these four contracts, thirty small firms are participating.

To date 171 requirement items have been dealt with and facilities have been recommended, in respect to 121, to the procurement officers concerned. The discrepancy between 39 prime contracts awarded and 121 requirements processed is accounted for by the time lag between specific facilities recommendations to procurement officers and the actual placing of the orders with those facilities.

Mr. Smith urged owners and managers seeking war work not to come to Washington unless called there for conference. "Save your time and money," he counseled. "See the Smaller War Plants Division man in your nearest War Production Board field office."

Following is the list of Deputy Regional Directors for Smaller War Plants in the War Production Board Regional Offices:

- | <i>Region</i> | <i>Deputy Regional Director
for Smaller War Plants</i> |
|---|--|
| 1. BOSTON, MASS., 17 Court Street—Clarence A. Woodruff. | |
| 2. NEW YORK CITY, N. Y., 122 E. 42nd Street—Sydney E. Hogerton. | |
| 3. PHILADELPHIA, PA., 1617 Pennsylvania Blvd.—Audenreid Whittemore. | |
| 4. ATLANTA, GEORGIA, 116 Chandler Bldg.—(To be designated.) | |
| 5. CLEVELAND, OHIO—13 Union Commerce Bldg.—Daniel P. Ford. | |
| 6. CHICAGO, ILLINOIS, 20 N. Wacker Drive—Linwood A. Miller. | |
| 7. KANSAS CITY, MISSOURI, Mutual Interstate Bldg.—Roy V. Webb. | |
| 8. DALLAS, TEXAS, 4th Floor, Fidelity Bldg.—William G. Morrison. | |
| 9. DENVER, COLORADO, Kittredge Bldg.—Robert W. Gordon. | |
| 10. SAN FRANCISCO, CALIF., 1355 Market Street—Oscar L. Starr. | |
| 11. DETROIT, MICHIGAN, 7310 Woodward Avenue—Hugo A. Weissbrodt. | |
| 12. MINNEAPOLIS, MINN., 326 Midland Bank Bldg.—(To be designated.) | |

Fabricating War Products

{Plane Air Cooler Boxes and Ducts}

By Ernest E. Zideck

Sheet Metal Consulting Engineer

FROM the dozens of small sub-assemblies aircraft builders obtain ready made the following may be, and are being, constructed in shops equipped with machines and tools used to work in peace time; augmented in some cases by one of the many means for making multiradial panels.

1—the rudder, inclusive of what, in airplane parlance, is called “fairing”;

2—the stabilizers, with a series of “flaps” or, elevators;

3—small parts of the fuselage bolted down to the tail of the aft section;

4—a series of small, double-paneled doors and covers for both the aft and the mid sections;

5—a number of small tanks of acetylene-welded construction;

6—the fuel tank cover of a reinforced construction, bolting down over the front section of the plane;

7—a variety of small parts, rolled angles, braked sections and similar simple constructions used for reinforcing the fuselage on the inside; and,

8—roughly constructed (because hidden), air cooler boxes and connecting ducts.

Purpose of Air Cooler

With number 8 item we shall deal here, showing a series of rough drafts indicating what the boxes and the ducts are like. Obviously, each particular design of plane has the air cooler parts constructed differently, but in general the parts are designed for the identical purpose of receiving the air blast into the forefront of what may be a portion of the wing and distributing the air around the engine unit and the motor, cooling the engine as, in an automobile, the water-circulating radiator does. Usually the air ducts contain a honeycomb radiator through which circulates oil, so that the air is received into the wings when the plane flies and gets its cooling effect from the impact of air in flight to serve the double purpose of cooling the engine and the oil.

The engine unit receives the air in between the

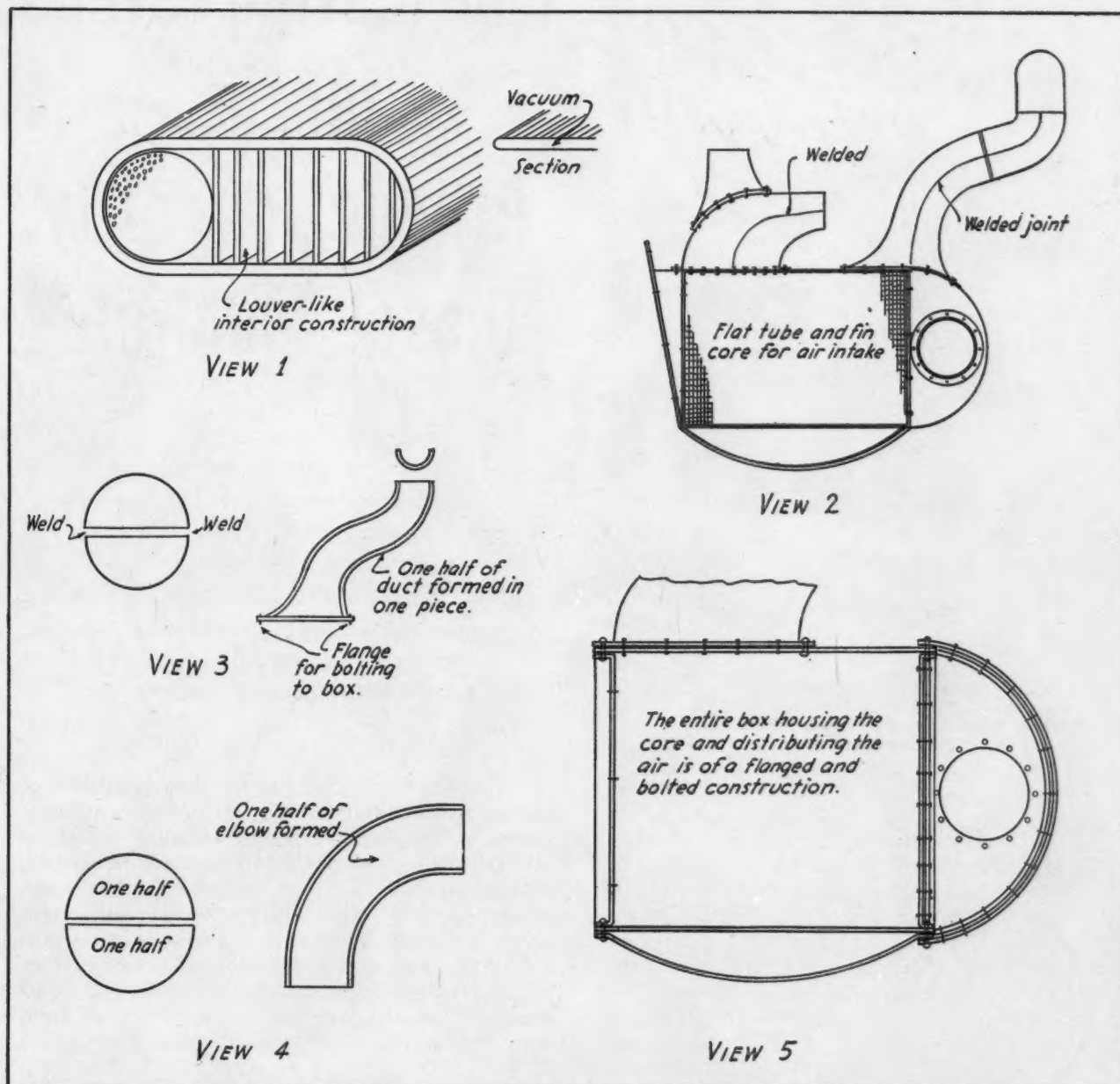
casings which envelop the engine with the inner unit usually provided with fins which increase the cooling surface exposed to the air stream. The construction of the air-receiving Intake, View 1, is such that the impact of air is borne by the louvers, which deflect the air sideways and distribute it evenly into the several ducts leading to the engine. These ducts, or pipes, Views 3 and 4, are constructed of .084 thick, soft aluminum, formed to shape in halves, as shown in the drawing, over hardwood or masonite or similar material forms, which may be operated, with proper mountings, in the press brake or a common press. These forms are best made with facilities for flanging over the surplus metal; because of the softness of the metal this is readily done. The surplus is then sawed off (the flanged over metal is sawed off) on a circular metal saw using blades as we would for hardwood. The formed halves are then acetylene welded together, with the saw cut in the corner of the flange affording a more rigid edge than if we were to cut through the single thickness of the metal.

Can Be Made in Sheet Metal Shops

In this description we are not concerned with the specific design or function of the Air-Cooler in planes. Rather, we are interested in seeing how such air cooling systems, being made of sheet metal workable by simple means, may be profitably fabricated in sheet and metal shops. Accordingly, in the several Views we illustrate the construction of the air receiving boxes and of the air ducts with intent to demonstrate, to the shop man, the feasibility of making these plane accessories in his own shop.

In View 2 is shown what appears a complicated structure, but on closer examination, looking also over the box shown in View 5, and considering the making of the ducts in the manner explained above, we see that the structure, consisting of flanged plates bolted together on the outside, is a simple matter.

In presenting these Aircraft Sheet Metal Parts

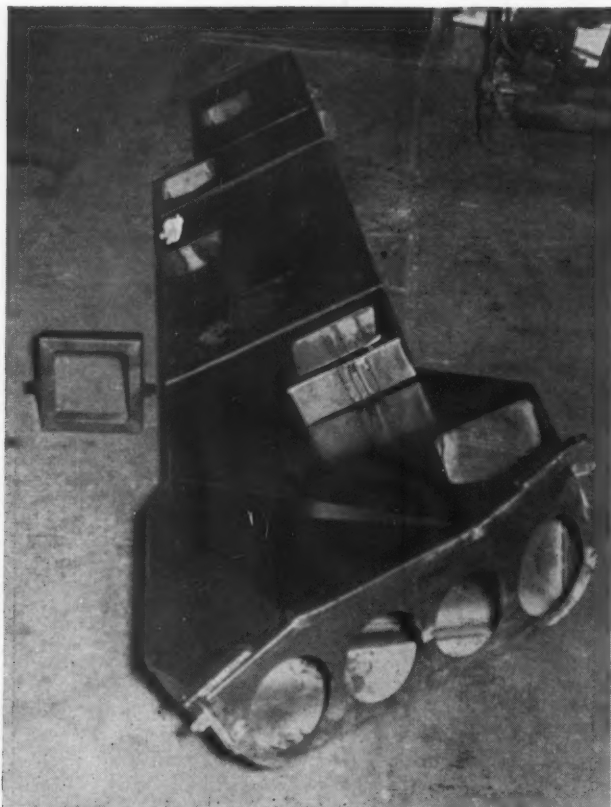


Plane parts like the items shown above are not common trade products and, as Mr. Zideck points out, may not be released to our industry by the plane manufacturers because the manufacturers do not appreciate just what our industry can make or is equipped to do. Personal solicitation is probably the best way to get such orders.

as feasible of fabrication in sheet metal shops the writer is encouraged by the fact that the plane builders, although having the space and the machinery, are greatly handicapped as to help trained in working sheet metal. In the East, in New England and in the vicinity of New York, the former tin shops, radiator shops and diverse sheet metal fabricating shops have been drained of the old-time mechanics who used to work by mallet and hand tools over the mandrel or similar tool. In the Detroit area the manufacturers complain that they can not get any "hand workers" in sheet metal. With the draft and attendant shifting of the worker resulting in more and more scarcity of the man who could do "fitting" of sheet metal parts by hand; and with aircrafters not competent enough to do the work with

"green" help; the plane builders will be more and more on the lookout for shops which could supply to them these simple, and yet not so easy for the uninitiated airplane components.

It must be borne in mind that, in air craft building, the "mass production" methods witnessed in the automobile do not apply as yet. Possibly, after the war, there will be mass production of utility and pleasure planes. But right now and for a considerable time to come, the planes are and will be built, eighty per cent *by hand*. And this explains why there is a shortage of hand workers in sheet metal and why, there being a crying need for more and more planes being built, the progressive sheet metal shop might get a share of the work to be done in building parts, items, sub-assemblies.



A finished manifold ready to ship shows intricate contours which had to be held true by elaborate welding jigs. The two "boxes" are pipe joint packing containers.

FOR Diesel stationary engines, Morgan Brothers Company of Pittsburgh is fabricating the large and heavy exhaust manifold of intricate contour and numerous complicated parts shown in the photographs and is holding the finished unit to the very close tolerances required by application by using special jigs and positioners.

Exhaust pipes from the engine run through the manifold; these hot pipes must be covered

Fabrication Steps in the Production of a Diesel Manifold

For this typical sub-contract item — very simple in general appearance — Morgan Bros. fabricated 151 pieces; some pieces were easy to make; others required elaborate set-ups of jigs to obtain standardization. The methods and procedure worked out show what can be done with ordinary shop equipment when a little ingenuity is exercised.

to eliminate danger of burns; this protection is the purpose of the manifold. Also, the manifold is placed on the engine after practically everything else is installed so the manifold must be so true that final assembly does not need prying and pinching into position. Since the manifold is 12-gauge material, the need for accuracy is evident.

Morgan Brothers have adopted several interesting practices in fabricating this manifold. For example, the center section has a number of hand holes which must be cut in the flat before the



Left—Photo 1—Lengthwise cuts for the handhold holes were made with the torch running in tracks clamped onto the sheet. Center—Photo 3—Flame cut handholes made as shown in Photos 1 and 2. Right—Photo 2—Cross cuts were made with the torch running free on its wheels—no track, but a template.



Left—Photo 4—The large center section was bent in a hand brake. The long radius bends were made in steps (see photo 5). Center—Photo 5—Checking center section with template. Note marks of brake on top and bottom long radius bends. Right—Photo 7—The cone of the transition end piece was made by holding one end stationary and pulling the sheet out of the brake after each bend. Note brake marks.

section is formed. Instead of a nibbler, this shop places the sheared sheet on a bench and an oxy-acetylene torch guarded either by a track or following a template cuts the hand holes.

These hand holes are rectangular. The long dimensions of each hole are cut with the torch running in the track as shown in Photo 1. All long cuts are made at this time. Then the torch is taken out of the track and the shorter cross cuts are made between previous cuts without the track. (See Photo 2.) The section after torch cutting is shown in Photo 3.

Cone Bending on Hand Brake

The center section is now ready for forming and despite the gauge and size of the section a hand brake is used to bend the section as shown in Photo 4. Three bends form the sheet into the shape shown in Photo 5 where the mechanic is using a template to check the section. One bend is sharp; the other two are long radius and are made by making parallel and partial operations sliding the sheet out of the jaws for each bend. Photo 5 shows the close forming accomplished by this method.

The larger end of the manifold has a still more intricate shape. Photo 6 shows the six principal pieces of the manifold placed in approximate relationship on the floor with the large end toward the camera. The two long radius bends are shown in Photo 6, but a better view of the contour is shown in Photo 7 where the cone shaped transition is being passed through the hand brake. A series of partial bends is again made with one end remaining fixed; the other end successively

pulled out of the jaws until the Photo 7 result is obtained.

Meanwhile the other pieces have been cut and



Photo 6—The six principle parts of the manifold placed in relative position on the floor. The next step is to weld these pieces together.



The six pieces shown in Photo 6 were placed in this self aligning jig made especially for the manifold. Shop scrap was used. By positioning in the jig and forcing the pieces in place with pressure and clamps, each manifold came out true despite the many pieces. Photo 10, below, shows a manifold after preliminary welding in the jig.



formed. The large end (see photograph of finished manifold) has a series of holes through which the exhaust pipes leave the engine and manifold. The end is cut to shape on a Beverly shear. A flame cutting machine is not suited to cutting the holes so an inclined punch has been equipped with a special die which cuts one hole at a time as the mechanic is doing in Photo 8.

The various six pieces which make the manifold are now assembled in the special jig shown in Photos 9 and 10. This jig was prepared especially

for these manifolds of welded angles and channels and is stationary in the shop. The pieces are fitted into position as shown in Photo 9, the jig serving to align the pieces while clamps hold each piece in position for welding. Then the stiffeners are placed inside as shown and welding begins.

Section seams are tack arc welded from the inside—all down hand hand welding. Then the stiffeners are welded to the sheets; the ends are welded in and the manifold is taken out of the jig looking like Photo 10. Final touch-up welding is

Photo 11—The six pieces shown in Photo 6 and the reinforcing and shaping brackets were only tacked in the jig. But the tacks were sufficient to hold the unit true in shape. Then the manifold was placed on trestles and the tacks were filled in to get continuous welds. Proper tacking prevented any distortion during final welding. Compare with Photo 10.





Left—Photo 12—The forming brackets shown in Photos 9, 10, 11 were formed in this shop made jig—construction described in text below. Right—Photo 13—An intricate bracket to hold the manifold onto the engine required the 10 pieces shown. The special jig shown held the 10 pieces while the pieces were welded together.

not done in the jib but on trestles (Photo 11). This operation on the trestles fills up all seams between tacks made in the jig and welds on pipes, nipples, lugs and fittings.

Two miscellaneous operations consist of making the brackets which fit inside the manifold. Tee iron is mitred and formed to bracket shape in the forming jig shown in Photo 12. This jig was made from a piece of scrap plate cut to shape and completed with the ears which hold the heated Tee iron to shape while bending is done with a heavy hammer.

Scrap Jigs Standardize Parts

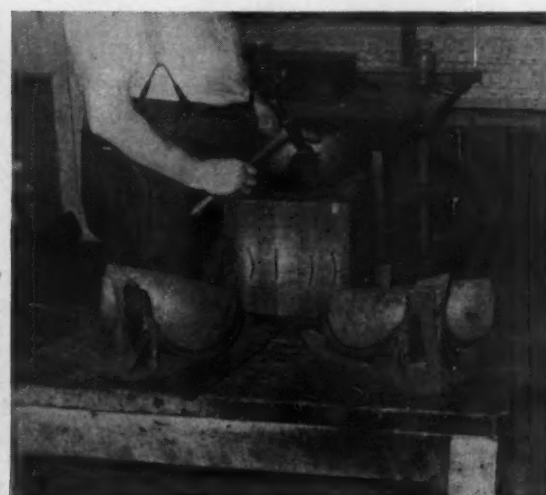
A very intricate bracket is made to hold the manifold to the engine. Photo 13 shows the jig made of scrap plate and pieces and the 10 pieces which make the bracket. The pieces are arranged in Photo 13 in the position in which each piece fits into the jig. Pieces are cut and drilled previ-

ously and are assembled in the jig for welding. Most of the pieces, incidentally, are cut with the torch as the mounting bracket is $\frac{1}{2}$ -inch stock.

Elbow Cover Requires Special Handling

The Morgan contract also includes metal elbow covers which insulate the exhaust pipes. A complete cover on an elbow is shown in Photo 14 together with the two blanks and the two halves after forming. The two halves split along the length of the pipe elbow and, after forming, are gas welded together. A special crew and a special shop produce these covers which are made of 22-gauge stock.

After blanking as shown in Photo 14, the halves are given a preliminary forming in the eccentric hammer (Photo 15), the hammer working against a wood anvil. Then the halves are placed in the special dies shown in Photo 16 and hand hammered to shape. Touch-up is done on the block



Left—Photo 14—A finished elbow cover; the two flat blanks before forming; the two halves after preliminary forming in the hammer. Center—Photo 15—Preliminary forming of the blanks was done in the eccentric hammer working on an anvil, not a die. Right—Photo 16—Halves from the hammer were given final forming in these two special dies made from shop scrap plate. Final forming was done by hand as shown.



Photo 8—Holes for the manifold end (see completed manifold photograph) were punched out one at a time on this special inclined punch die.

Claim 60,000,000 Lbs. of Stainless

A STEEL recovery program is underway.

An indication of methods by which millions of tons of steel will be redistributed to war use, was disclosed with the mailing November 2 of inventory report forms and price schedules to all known holders of idle and excess inventories of stainless steel and stainless steel products.

The steel recovery program covers 16 separate categories of steel and each of these categories will be handled separately.

The stainless-steel program, it is estimated, will eventually move as much as 60,000,000 pounds of stainless steel into war production.

Major points are:

1. As inventory reports are received from holders, the Government will make every effort to locate users for the steel in its present form and thus move it directly into war production at market prices.

2. Holders are urged, however, actively to seek qualified buyers for their steel in its "as is" form and, on their own initiative, to move it into war production by direct sale, as permitted by Priorities Regulation No. 13, Revised. Where a contemplated sale would not fall into the categories permitted under Regulation 13, the holder may apply to the WPB for special permission to sell.

3. Where direct transactions between sellers and private purchasers are impracticable, and products are suitable for rerolling or stock piling with a view of eventual use in present forms, the Steel Recovery Corporation will offer rerolling market prices and standard prices to all owners reporting such products.

4. In the case of steel which cannot be used in war production in its present form, the Steel Recovery Corporation may offer to purchase it. This material

and in the die until the halves are true. Another simple jig, not shown, is used to hold the halves in alignment while welding.

It should be said that this elbow probably requires more preliminary trial and error fitting than the much larger manifold. The cover must be exact; the curves are complex; the material is light; and to make the problem more difficult there are eight different elbows to be covered. The elbows come to Morgan with the asbestos insulation sewed on; Morgan must make the cover and fit it in place and then dent it as shown in Photo 14 to permit the assembly bolts to pass the cover.

151 Pieces Must Be Made and Assembled

By actual count there are in the manifold and the elbow covers 151 pieces which Morgan must cut, form, assemble and weld together. Not described, but shown in the photograph of a finished manifold ready for delivery, are the packing boxes which cover the connected joints in the exhaust pipes just outside the manifold. No paint finish is applied by Morgan, but all welds on the outside must be ground flush so that the finish is smooth. The usual electric grinding wheels and discs are employed to make all welds flush.

would then be resold as scrap to be melted down for war uses. The official Government purchase prices do not apply to materials which are already scrap in their present form.

Galvanized Ware Cut to 6 Items

GALVANIZED ware was put under simplification and curtailment restrictions November 7 by the WPB. The net result will be a reduction by January 1 from 150 articles of all sizes and kinds of galvanized ware now manufactured to 6 articles of only a few sizes.

In addition to galvanized ware, the order (L-30-a) applies to all products affected made of iron or steel which have plain, japanned, painted, lithographed, or lacquered finishes.

Effective November 12, the order cuts off production of filling cans, liquid and dry measures, dippers, utility baskets, and all rubbish and ash receptacles except cans and pails of specified sizes. Dippers and liquid and dry measures may be produced for military and other essential purposes, however.

For the next 2 months, the following items may be made: garbage cans and pails; pails and buckets; wash tubs; fire buckets; wash boilers; fire shovels; funnels; refrigerator pans; and kerosene storage containers.

Specifications as to dimensions, number of sizes which may be made by any manufacturer, and gage of the steel which may be used in the permitted items are listed in an appended schedule.

For the next 2 months, production of all of the permitted items is cut 50 percent (based on average monthly output in the year ending June 30, 1941).

NEW ENGLAND'S BIGGEST DUCT JOB!



*Done Better... Faster
at Lower Cost with
P-K Sheet Metal Screws*

YOU get a good idea of the size of this job from the fact that nearly 500,000 pounds of galvanized steel were fabricated into ducts by Stanley E. Priggen Co., sheet metal contractors of Cambridge, Mass.

That's a lot of sheet metal to assemble! So it was doubly important to employ the best and easiest assembly method. Mr. Stanley Priggen didn't need to search for that! He had a proved answer in *Parker-Kalon Sheet Metal Screws* . . . and used them on the New England Mutual Life Insurance Building job, as he had long used them for smaller installations.

You may never have a 500,000 pound job come your way. But, you can depend on Parker-Kalon Sheet Metal Screws to help you hold down time-and-labor costs . . . and hold up your reputation for sound work . . . whatever the job may be. *Parker-Kalon Sheet Metal Screws* give you the full benefits of fastening ease and speed. None of the time and labor saving is lost on trouble-making screws. For the unequalled Parker-Kalon Quality-Control routine eliminates the "Doubtful Screws" . . . screws that look right but fail to work right.

TRY THESE . . . Here are types of Self-tapping Screws that will cut costs when you're working with light or heavy sheets, steel plate, angle-iron or structural shapes. For free samples, write Parker-Kalon Corp., 190-192 Varick St., New York, N.Y.



TYPES FOR EVERY METAL FASTENING JOB



New England Life Insurance Building, Boston. Sheet Metal Contractors - Stanley E. Priggen Co., Cambridge, Mass.; Designing Mechanical Engineers - Buerkel & Company, Boston; Architects - Cram & Ferguson, Boston.

PARKER-KALON

Quality-Controlled

SHEET METAL SCREWS

Give the Green Light • to War Assemblies

Editorial Index for 1942

Advertising, Selling, Display

- McCarthy's, 1874-1942Feb., p 63
 Twin City Furnace Co., Minneapolis, in 1941 Sold
 \$165,000 Gross Furnace Work, \$125,000 in New
 Houses, \$88,000 From Pricing Books Given
 BuildersMar., p 41
 One Way to Get More New Furnace Sales...Aug., p 29
 The Farmer as a Heating Prospect.....Aug., p 34
 Insulation is "Plus" Business.....Aug., p 38
 Service Sales Under Price Ceiling.....Aug., p 58
 Converting Oil to Coal Should Be a Major Fall Ac-
 tivitySept., p 40
 Ours Is the Industry Which Can Guarantee Fuel
 SavingsOct., p 41
 "Uses the User" to Build Sales Volume, by George
 H. WatsonOct., p 44
 Service, Insulation, Stokers, Controls are Baerenk-
 lau's "Hedges" Against Recession, by R. C. Nason
Nov., p 40

Air Conditioning of Houses

- Furnace Installation Procedure in Four Public Hous-
 ing Projects (Burlington, Ia., Fort Wayne, Ind.,
 Rantoul, Ill., South Bend, Ind.).....Jan., p 99
 Warm Air Panel Heating in U. S. Residences (Rob-
 inson System, Detroit; Buck System, Fort Wayne;
 International Heater Systems).....Jan., p 113
 Shop vs. Field Fabrication of House Duct Systems
 (Weis-Ryan in the Shop—Adams on the Job).....
Jan., p 125

Air Conditioning—Small Commercial

- Air Conditioning a Woolworth Store.....Jan., p 132
 Furnaces in the Second Floor Halls of a Rehabilitated
 HotelFeb., p 44
 The All Fresh Air-Conditioned Hospital, by Everett
 S. BuckApr., p 41
 Evaporative Cooling in a Funeral Home, by B. P.
 RhinefortJune, p 38

Association Activities

- 7th International Heating & Ventilating Exposition
 PostponedJan., p 96
 28th National Warm Air Heating & Air Conditioning
 Association ProgramJan., p 96
 Association Activities—Miscellaneous.....Jan., p 182
 National Warm Air Heating & Air Conditioning As-
 sociation's 28th Annual Convention.....Feb., p 71
 Indiana's Zip-Zip, One-Day Convention.....Feb., p 75
 Association ActivitiesFeb., p 82
 Wisconsin "Pulls" Over 500 Conventioneers.....
Mar., p 75
 Ohio Streamlines Its 1942 Convention.....Mar., p 79
 Association Activities—MiscellaneousMar., p 83
 Association Activities—MiscellaneousApr., p 38
 New York State Convention.....Apr., p 75
 Michigan's Convention Reflects War Problems.....
Apr., p 78
 Illinois Convention Concentrates on War Era Prob-
 lemsMay, p 74
 Association ActivitiesMay, p 80
 Association ActivitiesJune, p 64
 NWAH&ACA Summer Meeting.....July, p 57
 Association ActivitiesJuly, p 61
 Pennsylvania's ConventionAug., p 55
 Association ActivitiesOct., p 72
 Sheet Metal Distributors Will Get a Guaranteed
 Monthly TonnageNov., p 69
 Association ActivitiesNov., p 72

Authors

- Aronson, HenryJan., p 141
 Battista, William P.....May, p 66
 Bitter, Henry C.....Apr., p 54
 Bliss, D. S., Deputy Commissioner, Treas. Dept.....
Feb., p 28
 Bristol, Leverett D.....Dec., p 38
 Buck, Everett S.....Jan., p 113; Apr., p 41
 Consley, H. L.....Feb., p 60
 Dingle, Joseph G.....Jan., p 177
 Easton, T. I.....Apr., p 32
 Ellis, F. R.....Apr., p 59; Oct., p 62
 Ferguson, Abner H., Federal Housing Administrator
Jan., p 92
 Fleming, Brig.-Gen. Philip B., Federal Works Ad-
 ministratorJan., p 92
 Gichner, Lawrence E.....Jan., p 160; May, p 58
 Greenburg, LeonardMay, p 66
 Hatch, TheodoreMay, p 66
 Herbacek, E. E.....Mar., p 59
 Herrick, Clayton B.....Mar., p 68
 Hickson, E. F.....Apr., p 70
 Hill, H. G.....Oct., p 49
 Jordan, Paul R.....Feb., p 64
 Konzo, S.....
 Feb., p 37; Feb., p 49; Mar., p 48; Apr., p 48; May,
 p 50; July, p 42; Sept., p 37; Oct., p 37
 Kruckman, Arnold
 Jan., p 94; Feb., p 34; Mar., p 38; Apr., p 36; May,
 p 26; June, p 22; July, p 32; Aug., p 20; Sept., p
 22; Oct., p 28; Nov., p 32; Dec., p 20
 Kuenhold, O. J.....Sept., p 43
 Kugler, A. N.....June, p 47
 McClean, C. A.....June, p 47
 Nason, R. C.....June, p 56; Nov., p 40
 Neubecker, William
 Feb., p 58; Mar., p 66; July, p 47; Sept., p 55;
 Nov., p 64
 Palmer, Charles F., Coordinator of Defense Housing
Jan., p 92
 Pipper, A. L.....Jan., p 171
 Reynolds, W. E., Commissioner of Public Buildings
Jan., p 93
 Rhinefort, B. P.....June, p 38
 Roberts, Arthur.....
May, p 72; June, p 61; Aug., p 58; Oct., p 30
 Robinson, C. A.....Jan., p 113
 Shelton, James G.....Aug., p 46
 Straus, Nathan, Administrator, USHA....Jan., p 93
 Thompson, Shelby, Acting Asst. Chief, Information
 Div., Farm Security Administration.....Jan., p 93
 Timmis, W. Walter, Chief, Plb. & Htg. Br., OPM....
Feb., p 28; Apr., p 30
 Viall, S. H.....Feb., p 46; Mar., p 53
 Walworth, Herbert T.....Jan., p 166
 Watson, George H.....Oct., p 44
 Wilson, James E.....Apr., p 32
 Witheridge, Wm. N.....Jan., p 166
 Wyer, R. F.....Oct., p 64
 Zideck, Ernest E.....
 Jan., p 147; Feb., p 66; Apr., p 66; May, p 60;
 June, p 50; July, p 52; Aug., p 50; Sept., p 62;
 Oct., p 60; Nov., p 59; Dec., p 48

Bookkeeping

- Ratio of Fixed to Variable Expenses Should Be Watched in 1942, by Arthur Roberts.....May, p 72
Stock Control Is Necessary Under Today's Price and Inventory Rules, by Arthur Roberts.....June, p 61
Your "Service" Sales Are Now Under OPA's Price Ceiling, by Arthur Roberts.....Aug., p 58
Job Recording System for Operations Under Price Ceilings, by Arthur Roberts.....Oct., p 30

Codes, Ordinances, Licensing

- Income and Expense for the Minneapolis Code.....Jan., p 181
Philadelphia's New Heating Ordinance.....Feb., p 78
Minneapolis Relaxes Code for Duration of the EmergencyMar., p 82
An Emergency Installation Code—Part I, by S. KonzoApr., p 48
Part IIMay, p 50
Part IIIJuly, p 42
Proposed Simplified Practice Recommendation for Pipes, Ducts, Fittings, Registers.....June, p 29

Controls

- Automatic Controls for Forced Air Heating Systems (Part 4), by S. Konzo.....Mar., p 48

Cooling, Evaporative

- Evaporative Cooling in a Funeral Home, by B. P. RhinefortJune, p 38

Duct Construction

- Shop vs. Field Fabrication of House Duct Systems (Weis-Ryan vs. Adams).....Jan., p 125
Duct Design and Construction to Speed Erection of Wide Ducts, by E. E. Herbacek.....Mar., p 59
Kramer Reduces Duct Costs by Simplification, Plus Standardization, Plus Quality Production.....Apr., p 51
Approved Substitute Boards for Ducts.....Apr., p 56
New England's Biggest Duct Job—500,000 Pounds, by F. R. EllisApr., p 59
Ducts and Fittings of "Substitute Boards" (A Study of Acceptable Practice).....May, p 38
Simplified Extended Plenum.....Sept., p 46
Round Ducts Save Metal, by F. R. Ellis....Oct., p 62
Ducts and Fittings of Substitute Materials, Part 2Nov., p 47
Klomprens Lock Joint—Needs No Metal..Nov., p 48
Metal Elbow—Takeoff with Technical Code Air Flow CharacteristicsNov., p 50

Dust Collection

- Waste Material Conveying Pipe Sizes, reprinted from "Standard Practice in Sheet Metal Work".....Jan., p 159
Wet Collector for Magnesium Dusts.....Feb., p 55
Wood Waste Removal System in a Pattern Shop....Aug., p 43
Adjustable Louvred Dust Collecting Hoods..Sept., p 68
Cigarette Paper, Straw Collecting System..Oct., p 59

Drying

- High Speed, Grain Drier for Unripened, Excessively Moist GrainMar., p 64

Engineering Design Data (Heating)

- A Short, Short Design Method, by Henry Aronson...Jan., p 141

- New Defense House Critical List.....Mar., p 32
The All Fresh Air-Conditioned Hospital, by Everett S. BuckApr., p 41
Inside Wall Returns Were New—20 Years Ago, by Henry C. Bitter.....Apr., p 54
Heat Loss Through Sewer Tile.....Apr., p 56
An Emergency Installation Code (Part I), by KonzoApr., p 48
An Emergency Installation Code (Part II), by KonzoMay, p 50
Defense House Critical List Amendments..May, p 37
Proposed Simplified Practice Recommendation for Pipes, Ducts, Fittings, Registers.....June, p 29
Earth-Floor Cold Air Plenums (Part 3)...June, p 41
Time Saving Slide Rule Heat Loss Calculation.....June, p 44
Heating and Insulation Requirements for Defense HousingJuly, p 37
Furnace Rating and Selection.....July, p 42
How to Build a Brick Casing.....Aug., p 30
Circulating Heaters Can't Provide Comfort..Sept., p 48
Duct Temperature Losses in Forced Air Heating SystemsOct., p 49
War Housing Construction Standards.....Dec., p 35

Fabrication—War Products

- Preliminary Shop Procedure, by Ernest E. Zideck...Apr., p 66
Combination Cabinet and Work Bench, by E. E. ZideckMay, p 60
Combination Cabinet and Work Bench (II), by E. E. ZideckJune, p 50
Quartermaster Cook's Tool Box.....July, p 52
Airplane "Gadget"Aug., p 50
Fabricating War Products (Sheet Metal in Aircraft Building), by E. E. Zideck.....Sept., p 62
Fabricating War Products (Q. M. Corps Heating Items), by Ernest E. Zideck.....Oct., p 60
Warplane Nose, Cowling, Ring.....Nov., p 59

Fume Removal

- Range Hood and Exhaust System in Post Mess Hall, by Lawrence E. Gichner.....Jan., p 60
Ventilation of a Trichlorethylene De-greaser, by Wm. N. Witheridge and Herbert T. Walworth..Jan., p 166
Fume Removal Hoods for Electrotape Pots, by Paul R. JordanFeb., p 64
Simple Vanes Equalize Exhaust Through Plating Tank Manifold, by Wm. P. Battista, Theodore Hatch and Leonard Greenburg.....May, p 66
Adjustable Louvred Dust Collecting Hoods..Sept., p 68

Fuel Saving

- Catechism of Proper Firing Methods (Part 2), by S. KonzoFeb., p 49
Fuel Saving by Reducing Room Temperatures at NightMar., p 50
Heating and Insulation Requirements for Defense HousingJuly, p 37
Six Ways to Save Fuel, by S. Konzo.....Sept., p 37
Converting Oil to Coal Should Be a Major Fall Activity for Every Dealer.....Sept., p 40
Check Sheet for Furnace Inspection.....Sept., p 42
Fuel Oil Rationing Program.....Oct., p 32
Fuel Savings Begin with the Furnace, by S. KonzoOct., p 37
Let's Tell the Public Our's Is the Industry Which Can Guarantee Fuel Savings.....Oct., p 41
Converting Oil to Coal—Priority Questions.Oct., p 69
The Fuel Oil Rationing Formula in Charted FormNov., p 43
Fuel Conservation Facts and Helps.....Dec., p 29
65 Degrees Can Be Comfortable, if.....Dec., p 38

General Business

Something to Sink Our Teeth In (E).....	Jan., p 91
Income Taxes, 1942 Style, by Jos. G. Dingle.....	Jan., p 177
Furnace Replacements	Jan., p 193
The Milwaukee Plan of Priority Allocation.....	Jan., p 213
Curtaiment is a Challenge, Not a Catastrophe.....	Feb., p 27
What Can the Heating Contractor Do Now and in the Future?, by S. Konzo.....	Feb., p 37
McCarthy's, 1874-1942	Feb., p 63
Priority Orders Which Affect Our Industry, by James E. Wilson and T. I. Easton.....	Apr., p 32
Most Regulated—But Still Fighting (E).....	May, p 25
Cannon Stoves in Barracks.....	May, p 34
Repair and Maintenance Must Keep Us Going (E).....	June, p 19
Proposed Simplified Practice Recommendation for Pipes, Ducts, Fittings, Registers for Warm Air Heating and Air Conditioning.....	June, p 29
Air Conditioning Equipment Fire Standards Amended	June, p 55
Maybe We're Over the Hill on Regulations (E).....	July, p 17
Heating Inspectors Wanted for Army Camps.....	July, p 21
Tires from One Car to Another.....	July, p 23
New Factory Construction Curtailed.....	July, p 34
Your Mechanics May Be Interested in This (Enlistments, Army Engineer Construction).....	July, p 34
NWAH&AC Association Summer Meeting.....	July, p 57
Simplified Practice for Stove Pipe.....	Aug., p 23
With Baling Wire and Chewing Gum, if Needed.....	Sept., p 21
How to Use the Allocation Classification System (Priorities Regulation 10, 11, 3).....	Sept., p 24
Wholesaler's Problems in a Wartime Economy.....	Sept., p 71
Let's Houseclean—For Scrap.....	Oct., p 23
Furnace Shipments in 1942.....	Oct., p 27
Have You Checked Your Present Status Under the Federal Wage and Hour Law?.....	Oct., p 70
More Sheets for Repair—Maybe.....	Nov., p 22
Purchase of Frozen Furnace Stocks.....	Nov., p 26
If You Expect to Operate a Truck, You Need a "Certificate of War Necessity".....	Nov., p 27
New Steel Warehouse System.....	Nov., p 30
The New Controlled Materials Plan.....	Nov., p 32
Manpower Problems	Nov., p 30
Furnace Manufacture Concentration.....	Nov., p 31
Inventory Control Coming.....	Nov., p 31
Help for "Little" Firms.....	Nov., p 31
New Controlled Materials Plan.....	Nov., p 32
Gasoline Ration Rulings	Nov., p 34
Repair, Conversion, Remodeling.....	Nov., p 34
We Ought to Fix These "Fixers".....	Nov., p 37
500,000 Housing Units Completed Since July 1, 1940	Nov., p 61
Government Construction Stopped.....	Nov., p 82
Assign Work to Idle Areas.....	Nov., p 95
We Stand Hopefully at the Crossroads (E).....	Dec., p 19
How to Borrow on Frozen Gas Furnace Stocks.....	Dec., p 24
Temporary Truck Gasoline Rations.....	Dec., p 26
Deferment of Essential Mechanics.....	Dec., p 26
The Controlled Materials Plan.....	Dec., p 40
The Wage Freeze Order.....	Dec., p 41
War Work for Small Sheet Metal Plants.....	Dec., p 47

Heating—Defense Houses

Furnace Installation Procedure in Four Public Housing Projects	Jan., p 99
Tri-Level Houses	Feb., p 88
Simplification Is the Key to Wampler's 1,500 Installations in Philadelphia Homes.....	Feb., p 40
New Defense House Critical List.....	Mar., p 32
\$100 Duct System.....	Mar., p 46
Inside Wall Returns Were New—20 Years Ago, by Henry C. Bitter.....	Apr., p 54

Gravity Furnace for a Two-Story Row House.....	May, p 48
58 Pounds of Duct Work.....	June, p 36
Heating and Insulation Requirements for Defense Housing	July, p 37
Gravity Furnace on the First Floor.....	July, p 40
An Emergency Installation Code (Furnace Rating and Selection), by S. Konzo.....	July, p 42
How to Build a Brick Casing.....	Aug., p 30
Simplified Extended Plenum.....	Sept., p 46
Circulating Heaters Can't Provide Comfort.....	Sept., p 48
100 Pounds of Ductwork.....	Oct., p 46
Three Level Defense Houses.....	Nov., p 38
The Uniduct System.....	Dec., p 36

Housing—Programs and Accomplishments

Adequate Housing Is a "Key" Defense Need.....	Jan., p 92
Our Immediate Housing Needs, by Arnold Kruckman	Jan., p 94
290,428 Privately Financed Homes Insured by FHA, July 1, 1940-Nov. 22, 1941.....	Jan., p 180
Housing and Heating Are in a Snarl.....	Apr., p 36
The New National Housing Agency (E).....	May, p 26
Remodeling Program for War Works.....	July, p 32
Heating and Insulation Requirements for Defense Housing	July, p 37
500,000 Housing Units Completed Since July 1, 1940	Nov., p 61
Government Construction Stopped.....	Nov., p 82
War Housing for 1943.....	Dec., p 20
War Housing Construction Standards.....	Dec., p 35

Humidification

Proper Humidification Lowers Heating Costs, by O. J. Kuenhold	Sept., p 43
---	-------------

Insulation

Insulation Makes a Furnace "Bigger".....	Apr., p 72
Heating and Insulation Requirements for Defense Housing	July, p 37
Insulation Is "Plus" Business.....	Aug., p 38

Patterns—Heating and Air Conditioning

Right Angular Elliptical T-Joint Oval Pipe and Semi-Circular Ends, by William Neubecker.....	Feb., p 58
To Mark Miter on an Elbow.....	Mar., p 61

Patterns—Industrial Blowpipe

Sizing Mains by the Steel Square—to Equal More Than Two Branches, by Wm. Neubecker.....	Mar., p 66
Multi-Piece Elbows, by Wm. Neubecker.....	July, p 47
Heavy Gauge Blow Pipe Fittings—Tapered Transformer Pieces, by Wm. Neubecker.....	Sept., p 55
Heavy Gauge Blow Pipe Fittings (Branch Junction with Tapering Main), by Wm. Neubecker.....	Nov., p 64

Price Regulations

Price Ceiling on Fuel Oil Tanks.....	Mar., p 35
Stock Control for Price Ceilings, by Arthur Roberts	June, p 61
Copper Inventory Resale Price Schedule.....	Aug., p 18
PR No. 188—Questions and Answers.....	Aug., p 25
Service Sales Under Price Ceiling.....	Aug., p 58
Maximum Price Regulation No. 204 (Prices on Frozen Inventories)	Sept., p 29
PR-204—New Pricing Formula.....	Oct., p 24
MPR-165—Oil Burners and Metal Work.....	Oct., p 25
The Steel Recovery Program.....	Oct., p 28
Job Recording System.....	Oct., p 30
MPR 251—Maximum Price Regulation Summary.....	Nov., p 23
MPR 251—Questions and Answers.....	Nov., p 24
MPR 236—Furnace Repair Parts (Text).....	Nov., p 25
MPR-165—Oil Burner Service Prices.....	Nov., p 28
The New Controlled Materials Plan.....	Nov., p 32
MPR-136—Sale of A. C. Equipment.....	Dec., p 72

Priority Regulations

L-22—The Furnace Limiting Order.....	Apr., p 27
L-22—Furnace Limiting Order.....	May, p 32
L-22—Repair Parts Permitted.....	Aug., p 19
L-31—Natural Gas Order.....	Mar., p 34
L-31—Additional Gas Areas.....	May, p 28
L-31—Restricted Gas Deliveries.....	Sept., p 31
L-31—November Amendment	Dec., p 25
L-38—Equipment Production Stopped.....	Oct., p 25
L-41—Stop Building Order.....	May, p 30
L-41—Ruling on Used Material.....	July, p 18
L-41—Cost Quota Explanation.....	Sept., p 91
L-41—Limitation Revisal	Oct., p 24
L-41—Insulation Exempted	Nov., p 100
L-41—Roofing, Siding, Defined.....	Dec., p 70
L-42—Simplified Stove Pipe.....	Aug., p 23
L-56—Fuel Oil Restrictions.....	Apr., p 35
L-56—West Coast Areas Affected.....	Aug., p 19
L-63—Suppliers' Inventory Control.....	May, p 31
L-63—Amendments 2 and 3.....	June, p 25
L-63—Materials Released from Order.....	July, p 19
L-63—Questions and Answers.....	July, p 20
L-63—Amended Text	Sept., p 32
L-74—Stop Oil Burner Production.....	May, p 33
L-75—Stop Stoker Production.....	May, p 33
L-75—Permit Assembly	July, p 19
L-75—Industrial Stokers Released.....	Nov., p 86
L-79—Gas Furnace Inventories.....	May, p 29
L-79—Gas Furnace Inventories.....	May, p 30
L-79—May 23 Amendments.....	June, p 20
L-79—Definition of Furnaces.....	July, p 18
L-79—Questions and Answers.....	July, p 20
L-79—Repair Parts Amendment.....	Sept., p 33
L-123—Industrial Equipment (Fans).....	June, p 25
L-123—Official Certification	Dec., p 22
L-142—Stop Production Metal Doors, Frames and Shutters	Oct., p 27
L-173—Stop Production Space Heaters.....	Sept., p 31
L-174—Manufactured Gas Curtailment.....	Oct., p 26
L-174—Amendment No. 1.....	Dec., p 70
L-187—Stop Boiler Production.....	Dec., p 76
M-9-c—Added Restrictions	June, p 86
M-9-c—Copper Repair Ruling.....	Aug., p 22
M-21-b—Amendment 5	June, p 26
M-21-b—Amendment 6	Aug., p 17
M-21-b—Amendment 7	Oct., p 24
M-21-e—Tin and Terne Order.....	Aug., p 19
M-126—New Appeal Procedure.....	July, p 19
M-126—Official Ruling on Gutters.....	Dec., p 23
P-55 Amended	Apr., p 34
P-84—Maintenance and Repair Order.....	Apr., p 30
P-84—Replacement Interpretation	June, p 26
P-84—Interpretation of Emergency Repairs.....	July, p 19
P-84—Converting Oil to Coal.....	Oct., p 69

P-100—Commercial Cooling Amendment.....	June, p 89
P-110—Remodeling Rerated	May, p 29
P-110—Material for Remodeling.....	May, p 33
P-115—Food Packers' Rating.....	Nov., p 86
PD-1A—Distributors Can't Use.....	July, p 18
PD-1X—Jobbers' Inventory Control.....	Apr., p 28
PD-1-a and PD-1-x—Differences Interpreted.....	Aug., p 26
PD-25A—PD-25X	Feb., p 30
PD-25A and PD-25X Revisions.....	Apr., p 34
PD-25a—Simplified Application	June, p 26
PD-25a—Simplified Form (Explanation).....	July, p 30
PD-25-a—Material for Grates.....	Sept., p 30
PRP—Preliminary Announcement	June, p 24
Production Requirements Plan (Explanation).....	Sept., p 30
Production Requirements Plan (Interim Procedure)	Sept., p 31
PRP—Amendment 4	Oct., p 26
Priorities Regulation No. 3 (Text).....	July, p 22
Priorities Regulation No. 10 (Text).....	July, p 28
Priority Regulation No. 10 Revoked.....	Dec., p 22
Priorities Regulation No. 11 (Explanation).....	July, p 24
Priorities Regulation No. 11 (Text).....	July, p 26
Priority Regulation 11, Amendment No. 2.....	Dec., p 22
Priorities Regulation No. 11 (Amendment No. 3).....	Sept., p 33
Priorities Regulation No. 13 (Text).....	Sept., p 27
Priority Regulation No. 13 (Questions and Answers)	Sept., p 34
New Furnace Production Regulations.....	Sept., p 22
Allocation Classification System—How to Use.....	Sept., p 24

Problems (The Problem Corner)

Refinishing Smoke Tarnished Stainless.....	Oct., p 66
--	------------

Sheet Metal—Architectural

Copper Ornamentation on New York Schools.....	Jan., p 151
Light Lead Sheeting on a Housing Project.....	Feb., p 56
How to Store Galvanized Sheets to Prevent Discolora- tion	Mar., p 71
Leaks—Teasing as a Cross-Word Puzzle, but Darned Annoying, by L. E. Gichner.....	May, p 58
12-Gauge Gutter—1,770 Feet Long.....	Oct., p 55

Shop Fabrication (Finishing)

Fewer But Better Finishes, by A. L. Pipper.....	Jan., p 171
Abrasive and Other Finishing, by Ernest E. Zideck	Feb., p 66
Substitute Paint Coatings for Metallic Zinc Coatings, by E. F. Hickson.....	Apr., p 70
Glass Masking Coat for Spray Painting.....	June, p 49
Laboratory Equipment for Finish Testing, by James G. Shelton	Aug., p 46
Substitute Coatings for Metallic Zinc on Steel.....	Nov., p 62

Shop Fabrication (Machine Operations)

- Fabrication of Machine Housings.....Jan., p 162
Do More with What You Have, by H. L. Consley....
.....Feb., p 60
Simple Devices to Improve Cutting Accuracy.....
.....Apr., p 64
Simple Devices to Improve Cutting Accuracy.....
.....May, p 64
Any Item Made in More Than 100 Pieces Warrants
Its Own Jig.....Oct., p 56

Shop Fabrication (Pipe)

- Pipe "Like New" from Your Scrap Pile...Sept., p 44

Shop Fabrication (Riveting)

- "Blind" Riveting, Explosive Riveting.....Aug., p 48

Shop Operations (Soldering, Tinning, etc.)

- Substitute Solders (Reprinted from Tin)...Apr., p 63

Shop Fabrication (Specialty Items)

- Manufacturing Procedure for a Service Station Cabinet, by Ernest E. Zideck.....Jan., p 147
Tanks, Bins and Hoppers.....Jan., p 155
Fabrication of Machine Housings.....Jan., p 162
Allred, Indianapolis, in 40 Years, Has Made 500,000
Miners' Dinner Pails.....Mar., p 62
Fabrication of a "Farm Freezer," by Emil Steinhorst
.....May, p 55
Wilder Mfg. Co., Brooklyn, Specializes in Items for
Bakers and Suit Manufacturers, by R. C. Nason...
.....June, p 56
Tanks—9 Stories High.....July, p 50
Sheet Metal Machine Tool Housings.....Sept., p 58
Beverage Tanks to High Altitude Oxygen Tanks....
.....Sept., p 66
Any Item Made in More Than 100 Pieces Warrants
Its Own Jig.....Oct., p 56
Fabricating War Products (Q. M. Corps. Heating
Items), by Ernest E. Zideck.....Oct., p 60
Plane Air Cooler Boxes and Ducts.....Dec., p 48
Production of A Diesel Engine Manifold....Dec., p 50

Shop Fabrication (Welding)

- Conservation of Welding Electrode Is Vital, by Clayton B. Herrick.....Mar., p 68
Welding Light Gauge Galvanized Sheets, by C. A. McLean and A. N. Kugler, General AED.....
.....June, p 47

- Keep Your Arc Welders Welding, by R. F. Wyer....
.....Oct., p 64
Instruction Outline for Welding Aluminum Sheet—
16 to 26 Gauge.....Nov., p 55
Welding Methods for 26-Gauge to 16-Gauge Aluminum SheetsNov., p 57
Avoid These Mistakes When Welding Aluminum....
.....Nov., p 58

Stoker Heating

- Rudiments of Small Stoker Operation, by S. H. Viall
Part IIIFeb., p 46
Part IVMar., p 53

Substitute Board Ducts

- Approved Substitute Boards for Ducts.....Apr., p 56
Ducts and Fittings of Substitute Boards...May, p 38
Procedure Under Which FHA Accepts Substitute
MaterialsMay, p 71
Ducts and Fittings of Substitute Materials (Part 2)
.....Nov., p 47

Training for Sheet Metal Work

- Streamlined Sheet Metal Training—Abrasive and
Other Finishing, by Ernest E. Zideck....Feb., p 66

Ventilation

- New England's Biggest Duct Job—500,000 Pounds,
by F. E. Ellis.....Apr., p 59

Washington Letter—by Arnold Kruckman

- Our Immediate Housing Needs.....Jan., p 94
Some Changes in Equipment Buying Procedure.....
.....Feb., p 34
Prime Contracts and Sub-contracts Up-to-Date....
.....Mar., p 38
Housing and Heating Are in a Snarl.....Apr., p 36
The New National Housing Agency.....May, p 26
New House Construction for the Next 6 Months....
.....June, p 22
Remodeling for War Worker Quarters Is Mired....
.....July, p 32
The Critical Metals Situation.....Aug., p 20
New Furnace Production Regulations.....Sept., p 22
Steel Recovery Program.....Oct., p 28
The New Controlled Materials Plan.....Nov., p 32
War Housing for 1943.....Dec., p 20

"... and look at the magazines they're appearing in."



A MOUNTAIN OF 57 MILLION ADVERTISEMENTS TO HELP INCREASE YOUR DUST-STOP* SALES

IMAGINE 57 million advertisements! ... that's the approximate total carried by national magazines during the 5-month Dust-Stop Air Filter Campaign now under way.

Certainly this advertising is being read in your vicinity. Already, people are looking up their Dust-Stop dealers. Do you want to profit from these inquiries? All right, just send for Dust-Stop's New Sales Plan and make this advertising go to work for you.

You'll get these Dealer Helps FREE!

Eye-catching Newspaper Advertisements—they're all ready to be turned over to your local newspaper.

Interesting Mailing Pieces—packed with

good sound selling points to make customers out of prospects.

Reminder Postcards—to follow up the mailing pieces. They prominently display your name, address, and telephone number.

Radio Spot Announcements—that further tie in your name and business with Dust-Stop's national advertising.

Attractive Window and Counter Displays—proved attention-getters that immediately identify you as the Dust-Stop Dealer.

Furnace Labels—that keep householders constantly reminded of your name and address for any future repair work.

Opportunity time is NOW!

Don't delay . . . start by cooperating

TODAY—while heating problems are still urgent. Pick up your phone right now and ask your distributor to send you Dust-Stop's New Sales Plan—"Pulling Profits out of the Air."

*Owens-Corning Fiberglas Corporation,
Toledo, Ohio. In Canada, Fiberglas
Canada, Ltd., Oshawa, Ontario.*

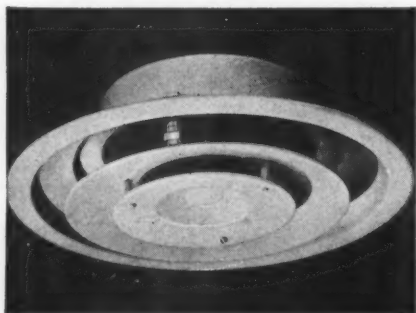
FIBERGLAS*
DUSTOP*
*T. M. Reg. U. S. Pat. Off.
AIR FILTERS

New PRODUCTS

118—W-A-R Diffuser

Dorex Division, W. B. Connor Engineering Corporation, 114 East 32nd Street, New York City, announces the Type W-A-R, Model F, high velocity ceiling type air diffuser—different from its predecessor in only one respect. It has been so re-designed as to retain every feature without wasting one ounce of critical material. It is now constructed of steel in place of aluminum.

The engineering staff has modified the entire Kno-Draft line so as to both reduce the outside diameters of all component members to a minimum without sacrificing diffusion performance, and permit material formerly wasted to be converted to use. The method of suspension and accessibility and ease of adjustment have also been greatly improved.



Type Dee damper for application to all Dorex Kno-Draft high velocity adjustable ceiling type air diffusers is furnished assembled within the diffuser by the manufacturer and is adjusted and tested before shipment and is ready to function when the diffuser is installed. Its operation is entirely independent of the air direction adjustment, which is part of all standard Kno-Draft air diffusers.

The Dorex type Dee complements the function of the air diffuser. It varies only the quantity, not the characteristics of the air distribution by the diffuser. With it, any series of diffusers may be positively and accurately balanced without affecting the air diffusion and distribution efficiency.

The Dorex Type Dee volume control consists of a sliding spun steel cylindrical damper fitted snugly to the inside of the diffuser neck and connected by means of a specially designed spider to the central screw which terminates in a turning knob, located in the center of the lower cone of the diffuser. By turning the adjusting knob, the sleeve damper is raised or lowered.

Bulletin WF-13 is available, as well as new list prices.

For your convenience a number has been assigned each item. Circle the items in which you are interested on the coupon on page 66 and mail to us.

● Indicates product not listed in 1941 Directory.

△ Indicates manufacturer not listed in 1941 Directory.

119—Motorelay

Barber-Colman Company, Rockford, Illinois, announces Motorelay to be used with any floating contact device in applications where the control current exceeds the contact rating of the control instrument.

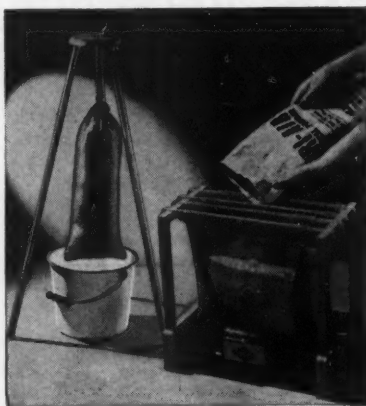


Construction includes a shaded pole, reversible geared head motor, totally inclosed switches and switching mechanism. An inclosed type drawn steel cover is available. Switch contacts have a non-inductive load capacity of 10 amperes at 100 or 230 volts, AC. Control circuit current is 0.35 amperes at 25 volts.

Bulletin A-20 or Catalog F-1753 are available.

120—Dri-Air Units

Tamms Silica Company, 228 N. La-Salle St., Chicago, offers two new units of non-essential materials—one



a commercial tripod unit designed for warehouse, factory and general store use, and the other for household, store or office use.

The commercial tripod unit has a sturdy, special treated wood tripod

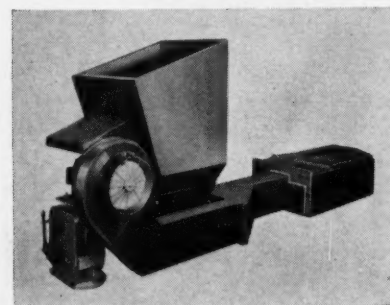
under which ten pounds of Dri-Air powder can be suspended in a mesh bag. The drippings from moisture absorbed by the Dri-Air powder are collected in the user's own bucket or pans.

The household unit has double mesh bags for holding 10 pounds of Dri-Air powder and has a walnut finish. The unit is complete with built-in basin for collecting the drippings.

Either outfit is adequate for removing excess moisture from 1,000 to 1,200 cu. ft. of air, and provides protection for basements, game rooms, closets, stock rooms, vaults, photographic darkrooms, warehouses, food plants, sugar and confectionery industries, etc.

121—Frederick Stokers

The Frederick Iron & Steel Company, Frederick, Maryland, has engineered an improved line of Frederick stokers, with more grate area, with low combustion rate per square foot, underfeed firing that thoroughly burns



every bit of coal, and fully utilizes the heat giving gases. Tuyeres are sectional type, heavily ribbed with plenty of cooling surface. Their air-ports are arranged and proportioned for correct air distribution to the coal bed, for maximum efficiency in combustion. Special heat resisting metal "Warite" is used for both tuyeres and retort. The retort is designed and proportioned for minimum resistance to the coal flow and to distribute coal evenly over the entire grate surface. Tuyeres are locked in place, but by removing the locking rod, they may be replaced, if necessary.

Enclosed cast iron windboxes eliminate the possibility of air leakage through brick work and resulting losses in efficiency. Incorporated with the wind-box is a stoker front providing easy access to the internal parts of the burning end.

New Products

For your convenience in obtaining information regarding these items, use coupon on page 66.

122—Improved Bumble Bee

Wilson Welder and Metals Co., Inc., 60 East 42nd St., New York, announces a new AC transformer type welding machine that combines safe-



ty with improved operating efficiency. The most interesting feature of the new Wilson "Bumble Bee" AC welder is its low open circuit voltage of 42 volts, automatically and positively maintained.

Power factor correction is provided

with built-in capacitors on all four sizes—300, 500, 750, and 1000 amperes—resulting in a power factor of 100 to 86 per cent (lagging) over the popular working range. With Wilson's new wiring arrangement, capacitors are cut out when the machine is idle thereby conserving power and reducing costs.

The new Wilson "Bumble Bee" is portable and streamlined, and its 18 inch width permits easy passage through narrow doors. It has dual voltage connections for either 220 or 440 volts and thermal overload protection provided by a cutout coil buried in the winding. A single hand wheel control gives an infinite number of current adjustments throughout the NEMA range.



excessive arcing and providing long contact life. The load current passes through the arc-blow-out coil, which surrounds a soft iron core to create a magnetic field and thus literally "blow out" the arc between the contacts.

Features of design and construction include: Automatic lockout in case of combustion or flame failure; automatic recycling if power fails (does not lock out); short, responsive, wide-range helix; super-power relay and combustion contacts operate efficiently regardless of control mounting position; trip-free lockout switch, cannot be blocked in closed position.

123—DC Stack Switch

Penn Electric Switch Co., Goshen, Indiana, offers a new direct-current stack switch, designated as Type 648 for intermittent ignition and Type 647 for continuous ignition. These stack switches feature "positive arc blow-out," insuring protection against

SERIES No. 3 NIAGARA POWER SQUARING SHEARS

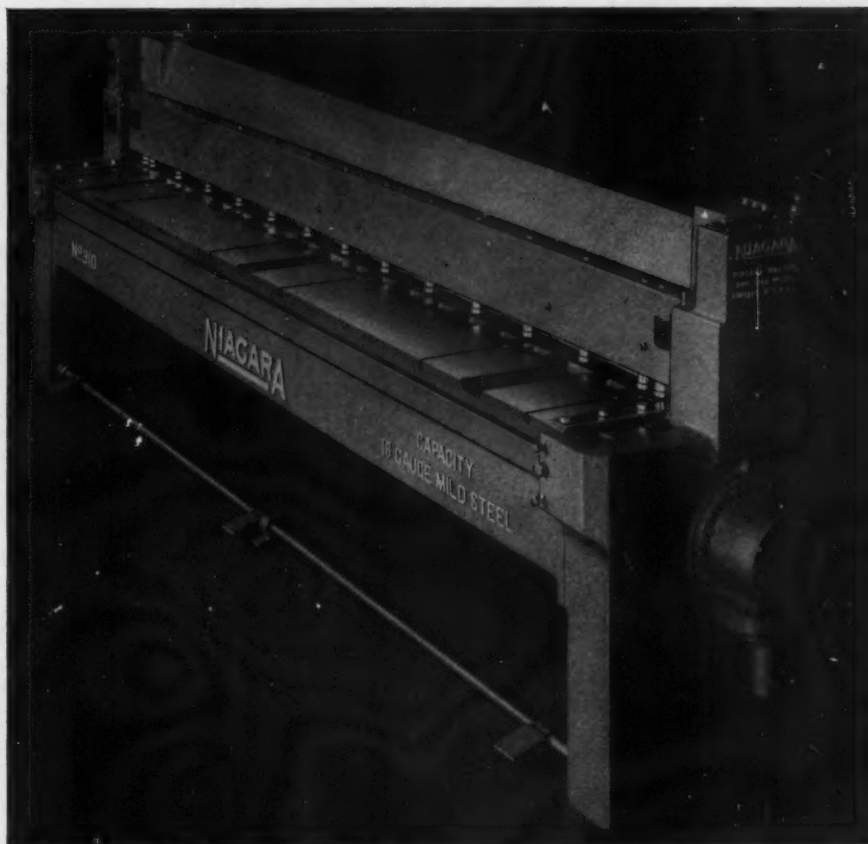
Series No. 3 Niagara Shears operate at 80 strokes per minute. High production squaring and trimming are assured by the instant-acting sleeve clutch, quick, accurate gaging and convenient operation.

They cut sheared edges and narrow strips straight to within a very few thousandths of an inch.

Motor is direct connected and drive is enclosed in oil tight case.

Standard equipment includes ball-bearing, self-measuring parallel back gage, front and side gages, and four edge, solid tool steel knives.

Niagara Machine & Tool Works, Buffalo, N. Y., Cleveland, Detroit, New York.



Capacities: 14 to 18 Gage. Cutting Lengths: 4 to 12 Feet



AS one of the most eventful years of our history draws to a close, we give our thanks to the finer America for which we are all striving and to you for your patience and understanding during the past twelve months.

Your job, like ours, has been beset by many new and difficult problems. Your fine cooperation, therefore, has been all the more appreciated and, once again, it is a genuine pleasure to wish you a most happy Holiday Season.

THE J. M. & L. A.
OSBORNE Co
CLEVELAND, OHIO

BUFFALO • CINCINNATI • DETROIT
Manufacturers—Distributors of Metals and Metal Products

A DEPENDABLE SOURCE OF SUPPLY FOR 83 YEARS

New Literature

For your convenience in obtaining copies of new Literature use the coupon on page 66.

322—Penn D. C. Stack Switches

Penn Electric Switch Co., Goshen, Indiana, is distributing Bulletin 1943 covering their Type 647 and 648 D. C. Stack switches. Type 647 for continuous ignition and Type 648 for Intermittent ignition. Outstanding features of design are charted. Electrical rating, dimensions, and wiring diagrams are given.

323—Know Your Blow Torch

The Turner Brass Works, Sycamore, Illinois, has produced a very attractive two-color Wall Chart, entitled "Know Your Blow Torch," to satisfy appeals for service and maintenance information on tools being used in war work. The chart shows how all parts of a blow torch are labelled, and how lighting instructions and safety hints are shown in action pictures. The chart is furnished free to industries and schools.

324—1943 Calendar

David Levow, 308 West 20th St., New York City, offers —while the supply lasts—one of their large 1943 calendars. Requests must be on company letterheads.

Important reference tables especially compiled for the trade give information on United States Standard Revised comparison of wire gauges; expansion and contraction; diameters, circumferences and areas of circles; contents of round tanks; physical properties of metals; sizes of drills to be used for corresponding U. S. standard taps;

slopes of roofs; also weight and measures and useful rules of calculation.

325—Thor Scrap Book

Independent Pneumatic Tool Co., Aurora, Illinois, is distributing a 32-page and cover Scrap Book dedicated to the men and women of the company for their great achievement in winning the Army-Navy Production Award. Following the foreword are reproductions of the announcement from the Department of the Navy and the letter of acknowledgment by President Neil C. Hurley. The significance of the award is explained as well as the Emblem of Excellence for production workers.

There is a pictorial review, with text, of the presentation ceremonies. Capt. Robert Henderson of Secretary of the Navy Knox's staff, made the presentation.

326—The Milcor Mike—News and Views of Milcor Folks

Milcor Steel Company, Milwaukee, Wisconsin, has published and is distributing "The Milcor Mike—News and Views of Milcor Folks," with a welcome to new persons in the factory, and to keep the contact with those of the Milcor organization now in far parts of this topsy-turvy war-world. The Milcor Mike is published from time to time for Milcor people and those interested in company activities. There is a full-page picture of President E. A. Tanner, a short history of the company, and pictures of C. G. Wollager, Vice President; E. L. Lipman, Secretary and Treasurer, and George F. West, Vice President in Charge of Purchasing.

The Roll of Honor for World War II is in color, and there is considerable news of Milcor Men in the armed forces, and a fairly complete list of Milcor men in the armed forces with the address of most.

**PROMPT
SERVICE
TO YOU**

**CONVENIENCE
FOR THE
INSTALLER**

Steel Rod

Sharp Piercing
Point with Four
Cutting Edges

Rod may be used as
Punch on Heavy Furnace
Pipe

Heavy Cast Reversible Blade

Extra Heavy Spring

Has Arrangement for Keeping
Spring and Ferrules in Place When
Rod Is Out of Blade

BUY ADAMS KNOWN QUALITY

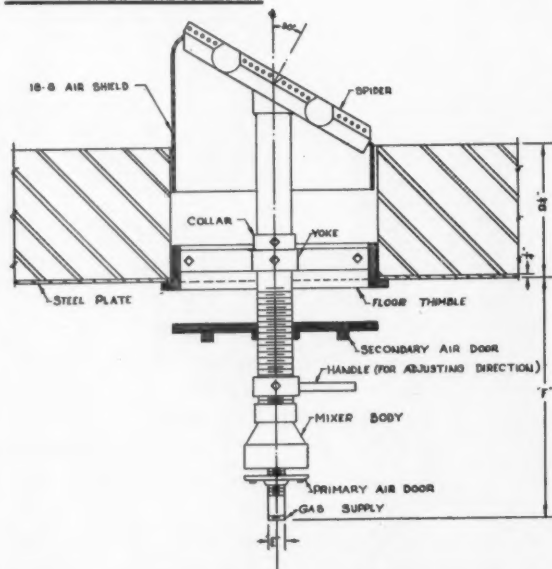
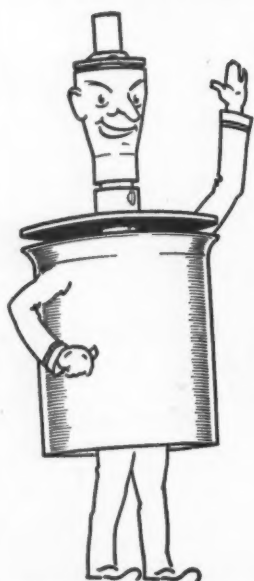
Write for catalog showing heating specialties we can now furnish on orders with priority ratings.

ADAMS

DIAMOND SMOKE PIPE DAMPER

MANUFACTURED BY
THE ADAMS COMPANY
DUBUQUE, IOWA, U. S. A.

"JOHN ZINK again does something startling in the development of BURNERS"



JOHN ZINK BI-MIX DIRECTIONAL HEAT BURNER

Can be furnished as gas burner only or as combination oil and gas burner. ADJUSTABLE—the operator can turn the burner to place the heat where desired.

Write for Details Now!

John Zink Co.
TULSA, OKLAHOMA

New York • Los Angeles • Detroit • Atlanta

New Literature

For your convenience in obtaining copies of new Literature use the coupon on this page.

327—Odor Adsorbers—Bulletin No. 105

The Dorex Division of W. B. Connor Engineering Corporation, 114 East 32nd Street, New York City, is distributing Bulletin No. 105—8 pages—covering their odor adsorbers for air conditioning and industrial odor control. Included are a list of some of the many gases and vapors which the Dorex Adsorber will remove from the air.

328—Castolin Alloy in Refrigeration Field

Eutectic Welding Alloys Co., 40 Worth St., New York City, is distributing Bulletin No. 168, dated October 5, covering the use of Castolin Eutectec Alloy No. 16 in joining straight lengths of 20-ga. steel tubing to turns with a lap joint for refrigeration equipment. Once welded, the coils can be galvanized.

329—Grinding Time-Saving Devices

The George Scherr Company, Inc., 128 Lafayette St., New York City, has just brought out a new 8-page folder, describing its line of time-saving devices for the grinding room. Included is a complete description of Magne-Blox products, magnetic parallels used on magnetic chucks for holding work for surface grinding operations and radius dresser for dressing radii from 0 to 1 inch.

330—Centrifugal Compressors

B. F. Sturtevant Co., Hyde Park, Boston, Mass., is distributing Catalog No. 386-2 covering Design Nine Sturtevant Centrifugal Compressors—20 pages devoted to descriptive data, performance tables, dimension diagrams, unit and installation photographs. Design Nine centrifugal compressors are available in more than 200 sizes, with pressures from ½ to 3 pounds, volumes to 5,500 cfm. Features include ability to deliver a wide range of volumes at constant pressures, exceptionally quiet operation, compact design, easy installation and power savings.

331—Air Filtration and Dust Control

American Air Filter Co., Inc., Louisville, Ky., is distributing a 32-page catalog entitled "AAF in Industry" in its fifth printing. Industrial problems, atmospheric dust, and process dust are subjects covered, as well as filtered air for industrial air conditioning, industrial ventilation, drying operations, product finishing, control of bacteria and mold spores, cooling electrical equipment, protection of engines and compressors, and miscellaneous industrial applications. Control of process dust is also treated.

The company offers a nationwide dust engineering service for dust problems of industry.

FOR YOUR CONVENIENCE

American Artisan, 6 N. Michigan Ave.
Chicago, Ill.

Please ask the manufacturer to send me more information about the equipment mentioned under the following reference numbers in "New Products" and "New Literature." (Circle numbers in which you are interested):

118	119	120	121	122	123
322	323	324	325	326	327
328	329	330	331		

Name

Company

Address

Are you Manufacturer—Jobber—Dealer—

With the Manufacturers . . .

United States Radiator Corporation Moves

The United States Government having requisitioned the quarters of the United States Radiator Corporation and Pacific Steel Boiler Division in the National Bank Building, the general offices are now located at 1500 United Artists Building, Detroit, Michigan.

Fireline Announces Prize Contest

A prize contest open to all furnace dealers has been announced by the Fireline Stove & Furnace Lining Co., 1860 Kingsbury St., Chicago, Ill. The first prize is \$25.00, second prize \$15.00, with three additional prizes of \$5.00 each.

The above prizes are offered for the best letters on the experience of the furnace dealer with Fireline Stove and Furnace Lining. The manufacturers of Fireline know that their material is being used extensively to line warm-air furnaces and that in this service it repairs burned-out firepots and preserves good castings, but through the medium of this contest they hope to secure data on actual installations of Fireline where these benefits have been accomplished. It is expected that the prize-winning letters will include information on successful installations of Fireline, which have now been in service for a number of years.

The Fireline Company also finds that under present war conditions, when the furnace dealer can secure furnaces and accessory equipment only with the greatest difficulty, an item like Fireline is proving invaluable in enabling the dealer to solicit furnace lining jobs and thus keep his business going during a difficult period.

Fireline is an important item for the dealer during the winter season. During the cold weather it is, of course, difficult to sell furnace equipment of other kinds, but a Fireline lining can be installed even during the heating season in a few hours without dismantling the furnace. With Fireline the dealer can install his lining and start up the fire again before the building actually gets cold.

It is expected by the Fireline Company in announcing this contest that the experience of the dealer in turning the above advantages of Fireline to his own benefit will also be covered in the prize-winning letters.

The closing date for this contest is January 15, 1943. Letters post-marked up to midnight on January 15 will be considered. The Fireline Company is to be the sole judge in the contest. No letters will be returned and it will be understood that any letter receiving a prize will become the property of the Fireline Stove & Furnace Lining Co. for such use as they may deem fit.

Obituary

The Stanley Works, New Britain, Conn., announces with profound sorrow the death of their chief engineer, D. A. Keating, on October 20, 1942.

George Verity, founder and chairman of the board of American Rolling Mill Company, died at his home in Middletown, Ohio, on November 6—aged 77. He was born in East Verity, Ohio, on April 22, 1865—a son of the Rev. Jonathan Verity, a Methodist circuit rider. In 1877 he entered the employ of Sagendorph Iron Roofing & Corrugating Co., Cincinnati, and the following year became manager. In 1891, he reorganized the company as the American Steel Roofing Co., becoming vice president and general manager. In 1900 he worked out the consolidation and reorganization plan which resulted in the American Rolling Mill Co., and served as president until 1930.

He is survived by his widow; a son, Calvin, vice president; and two daughters—Mrs. Newman Ebersole and Mrs. Charles R. Hook, wife of the president of Armco.

ARMSTRONG HEARTILY ENDORSES THE GOVERNMENT'S NATIONAL FUEL CONSERVATION PROGRAM



1. TO INSPECT AND ADJUST HEATING EQUIPMENT

* THARCO FURNACE CEMENT for recementing furnaces and sealing the unit against air and gas leaks.

* ARMSTRONG'S VICTORY FURNACE LINING a plastic refractory recommended for use in keeping the heating plant in service only when a replacement firepot is not available. This is offered as a victory substitute—not a permanent remedy.

2. TO INSULATE WALLS, AND ROOF OR ATTIC

* ARMSTRONG'S OIL ROOFING CEMENT for sealing around roof flashings.

3. TO INSTALL STORM WINDOWS AND DOORS

* ARMSTRONG'S ARM-GLAZE, the elastic glazing material which, due to its permanent elasticity, eliminates the old putty troubles. To make your furnace service complete, recommend this to the homeowner.

4. TO WEATHER STRIP AND SEAL AIR LEAKS

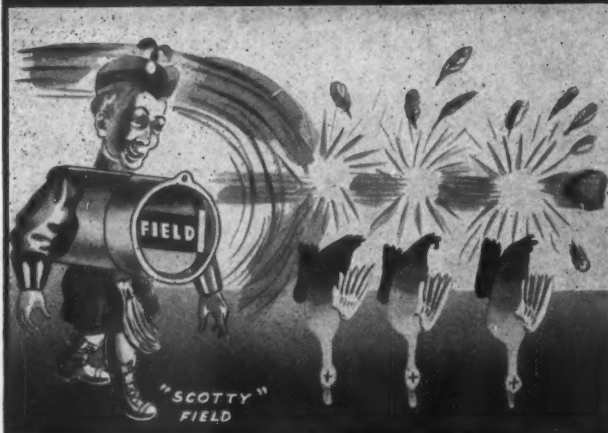
* ARMSTRONG'S CAULKING COMPOUND (Both gun and knife). Make your furnace service more complete by rendering this type of service. Due to shortage of guns, we suggest the knife grade because it can be installed with simple tools such as a putty knife, trowel, or even by hand.

*YOUR JOBBER CAN SUPPLY ALL THE ABOVE
ARMSTRONG PRODUCTS

THE KEYNOTE OF VICTORY IS ECONOMY — REPAIR
ONCE AND WELL TO SAVE FUEL—MONEY—LABOR

THE ARMSTRONG COMPANY
DETROIT DALLAS CHICAGO

THREE BIRDS WITH ONE STONE



Field Controls

Help WAR-RESTRICTED DEALERS To Serve Their Country, Their Customers And Themselves MORE Effectively

WITH each FIELD installation, YOU make a worthwhile profit, YOUR CUSTOMER reduces his fuel consumption from 5% to 25%, and YOUR UNCLE SAM gains too! To Uncle Sam each installation means MORE FUEL for strictly War Production needs; MORE SPACE in over-burdened tankers and railroad cars for strictly war consignments. . . — IF your heating line is restricted, FIELD CONTROLS offer the opportunity to keep sales and profits UP! There is a FIELD CONTROL for every installation — from the largest industrial boiler down to the smallest residential space heater — coal, oil or gas. . . — Wouldn't you like full information on this fast-selling, easily installed line?

9 Out of 10 Heating Plants Need A Field Draft Control - Savings Usually Effected Range From 5% Up To 25%



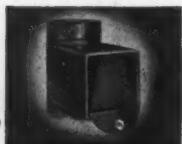
COMMERCIAL



TYPE M



6" TYPE U



TYPE K

FIELD CONTROL DIVISION
MENDOTA, ILLINOIS



With the Manufacturers . . .

R. M. Allen, General Manager of Sales, Allegheny Ludlum Steel Corporation, announces the appointment, effective immediately, of W. E. Griffiths as Assistant Manager of Sales, Flat Rolled Products. Mr. Griffiths was formerly Manager of the Product Development Department, where he established an enviable record.

Obituary

Charles Ellsworth Glessner, vice president and sales manager of Excelsior Steel Furnace Co., Chicago, was buried Friday, November 20. Mr. Glessner, aged 57, was a nephew of the late Arthur W. Glessner, president of Excelsior, who died September 10, and brother of Henry and Arthur Glessner. He is survived by his widow and daughter.

Association Activities . . .

Wisconsin

The Wisconsin Sheet Metal Contractors Association, Inc., will hold their 29th annual convention on Monday and Tuesday, February 8th and 9th, 1943, at the Hotel Schroeder, Milwaukee, Wisconsin.

The Convention Committee is functioning now and will advise from time to time the progress being made.

The 29th annual will be strictly a business convention, eliminating as much as possible all the elaborate entertainments and frills. A real educational program commensurate with the present emergency will be worked out.

Paul L. Biersach, Secretary.

Michigan

Eugene C. Spraker, secretary of the Michigan Sheet Metal, Roofing, Heating & Air Conditioning Contractors' Association, received orders to report to the Sixth Service Command headquarters on October 17.

He is commissioned a Lieutenant Colonel as the result of promotions received since he entered the services in 1916. In 1916 he enlisted with the 32nd Michigan Infantry and served on the Mexican border. He served in France with the 32nd Michigan Infantry in World War I and was promoted to First Lieutenant in 1918. He was commissioned Captain of Engineers in 1924, promoted to Major of Infantry in 1933 and Lieutenant Colonel of Infantry in 1939.

CONVENTIONS

1943

Jan. 25-27—American Society of Heating & Ventilating Engineers. 49th Annual. Hotel Gibson, Cincinnati. A. V. Hutchinson, Secretary.

Feb. 8-9—Wisconsin Sheet Metal Contractors Association, Inc. 29th Annual. Hotel Schroeder, Milwaukee. Paul L. Biersach, Secy., 225 E. Michigan St., Milwaukee.

Mar. 2-4—The Michigan Sheet Metal, Roofing, Heating and Air Conditioning Contractors' Association. Annual. Saginaw. E. C. Spraker, Secretary, 1560 Mackinaw Road, Grand Rapids.

Mar. 17-18—New York State Sheet Metal, Roofing & Air Conditioning Contractors' Association, Inc. Annual. Newburgh, N. Y. Clarence J. Meyer, State Secy., 567 Genesee St., Buffalo.

More Restricted Gas Heating Areas

(Continued from page 25)

Woodville and Centerville, and the area served by the United Gas Pipe Line Company).

Missouri.	Tennessee.
New York.	Virginia.
Ohio.	West Virginia.
Pennsylvania.	

AREA II

Kansas (only the following counties):

Allen.	Johnson.
Anderson.	Labette.
Atchison.	Leavenworth.
Bourbon.	Linn.
Brown.	Miami.
Cherokee.	Montgomery.
Coffey.	Nemaha.
Crawford.	Neosho.
Doniphan.	Osage.
Douglas.	Shawnee.
Franklin.	Wilson.
Jackson.	Woodson.
Jefferson.	Wyandotte.

AREA III

Iowa (only the areas served by Northern Natural Gas Co., and utilities obtaining any part of their requirements from this company).

Kansas (only the areas served by Cities Service Gas Co., Kansas Power and Light Co., Kansas-Nebraska Gas Co., Consolidated Gas Utilities Corp., Drillers' Gas Co., and utilities obtaining any part of their requirements from these companies, except those areas included in Area II, above).

Minnesota.

Nebraska (only the areas served by the Northern Natural Gas Co., Kansas-Nebraska Gas Co., Cities Service Gas Co., and utilities obtaining any part of their requirements from those companies).

Oklahoma (only the areas served by Cities Service Gas Co., Consolidated Gas Utilities Corporation, and utilities obtaining any part of their requirements from these companies).

South Dakota (only the areas served by Northern Natural Gas Company, and utilities obtaining any part of their requirements from this company).

AREA IV

Iowa (only the areas served by the Natural Gas Pipe Line Company of America, and utilities obtaining any part of their requirements from this company).

Kansas (only the areas served by the Natural Gas Pipe Line Company of America, and utilities obtaining any part of their requirements from this company, except those areas in Kansas included in Area II or Area III, above).

Nebraska (only the areas served by the Natural Gas Pipe Line Company of America, and the utilities obtaining any part of their requirements from this company).

AREA V

Those areas in New Mexico, Colorado and Wyoming supplied by the Colorado Interstate Gas Company, or

Again it's Christmas....
and again it's our privilege
to extend to you

Heartiest
Season's
Greetings

We hope your New Year
will be most bountiful and
that you receive your full
measure of Life's richest
blessings...

The **LOCKFORMER** Co.
4617 ARTHINGTON STREET, CHICAGO, ILLINOIS



Help Your Customers Save Fuel This Winter!

The easiest, quickest way for your customers to cut fuel costs is to *change dirty filters . . . prevent heat being lost up the chimney.* Feature **RESEARCH AIR FILTERS** . . . specified by leading furnace manufacturers.



Here's a Profit-Building Tip
SELL-A-BOX
of Research Air Filters . . .

Your customers will change filters more often, use less fuel if they **BUY A BOX OF RESEARCH AIR FILTERS.** Increases your profit, cuts down deliveries.

The Famous Research Air Filters



NO. "100 SERIES"

Disposable type, fiber frame. Patented Honeycomb mesh catches dirt with minimum restriction.



RESEARCH
PRODUCTS CORP.
Madison, Wisconsin

by any utility receiving all or any part of its gas supply from said company.

AREA VI

Those areas in Arizona and New Mexico (except Eddy, Lea and Chaves counties in New Mexico, served by the El Paso Natural Gas Company or by any utility receiving all or any part of its gas supply from said company.

Amendment No. 1 to L-174

PART 3039—MANUFACTURED GAS

[Amendment 1 to Limitation Order L-174]

2. Paragraph (d) of Limitation Order L-174 is hereby amended to read as follows:

(d) *Restrictions upon deliveries to consumers other than domestic consumers.* No utility shall deliver manufactured gas to any consumer, other than a domestic consumer, for the operation of any gas-fired equipment (including space-heating equipment) which was not installed (or if converted from some other fuel, such conversion was not completed) at the same premises prior to September 1, 1942, unless:

(1) Such equipment is non-space heating equipment and has an aggregate input capacity of less than 150 cubic feet per hour.

(2) Such equipment replaces similar type gas-fired equipment of equal or greater capacity previously installed or operated by the same consumer at the same premises for the same purposes, or

(3) Such deliveries are specifically approved in advance by the Director General for Operations. Any consumer or utility which considers that such deliveries are necessary for war production or the operation of an essential civilian service may apply for such approval to the Director General for Operations.

No person shall install gas-fired equipment designed to receive deliveries of manufactured gas from any utility if such deliveries are prohibited by this paragraph.

3. Paragraph (e) is hereby amended to read as follows:

(e) *Restrictions upon deliveries to domestic consumers for space heating.* Except where otherwise directed by the Director General for Operations, no utility shall deliver to any domestic consumer and no such consumer shall accept deliveries of manufactured gas for the operation of any space-heating equipment unless such equipment:

(1) Was installed (or if converted from some other fuel to manufactured gas, such conversion was completed) at the same premises prior to September 1, 1942, or

(2) Replaces similar type space-heating equipment of equal or greater capacity previously installed or operated at the same premises whether by the same or by another consumer, or

(3) Was installed prior to November 15, 1942, in a new building, and such equipment was specified in the construction contract, and the foundation under the main part of the structure in which the equipment is to be installed was completed prior to September 1, 1942.

No person shall install space-heating equipment designed to receive deliveries of manufactured gas from any utility if such deliveries are prohibited by this paragraph.

4. Paragraph (f) of Limitation Order L-174 is hereby amended by adding the following Subparagraph (3):

(3) Application by all consumers for exemption

from the space-heating restrictions of this order shall be made on Form PD-673. Applications by non-residential consumers for exemption from the restrictions on deliveries for non-space heating purposes shall be made on Form PD-672.

Roofing-Siding Under L-41

TO remove any misunderstanding that exists regarding the effect of the construction limitation orders (L-41 and L-41-b) on certain classes of building materials, this interpretation is announced.

When roofing or siding is made a part of a structure by being in any way affixed to a permanent surface while building operations are in progress, whether in new construction, remodeling or rehabilitation, the use is considered to be "construction" as defined in L-41 (paragraph a-2). The only permissible exceptions being those cases in which patching or replacement takes place solely to mend or restore portions of a structure which have suffered damage or deterioration from ordinary wear and tear, breakage and the like.

When siding or roofing is applied to an entire wall or an entire roof, so as to match the work and improve the appearance, the alteration would be classified as "construction," and would be subject to the limitations imposed by L-41.

Whenever the new siding or roofing is applied to a portion of a structure that is not in actual need of repair, the work is counted as construction, according to today's interpretation (No. 2 of L-41).

In consequence of inquiries as to whether roofing or siding materials come within the exceptions allowed for "insulation materials" as that term is used in L-41-b, interpretation No. 1 of the supplementary order expressly states that the paragraph and section relating to insulation materials is not applicable "whether or not such siding or roofing has insulating qualities."

Large Storage Oil Users

IN some sections of the country consumers living in private dwellings who use fuel oil for heat or both heat and hot water purchased abnormally large amounts of fuel in advance of rationing. Those individuals must, however, apply for a ration and their consumption during the heating year will be limited to the amount of the ration.

Homeowners, who burn fuel oil without applying for and receiving a ration are violating the provisions of the fuel oil regulation. These regulations specifically prohibit consumption of fuel oil after November 23, unless the oil was acquired in exchange for ration coupons or other authorized evidences, or was included in a statement of inventory on an application form filled in by the consumer.

If, for example, a consumer who uses fuel oil for heat and hot water is issued a ration of 1100 gallons and has 1500 gallons in storage he may not consume the 400 gallons in excess of the ration. Consumers are urged to return this excess to a dealer and the consumer must report the transfer to his local rationing board. The dealer, in turn, will deliver to the appropriate local rationing board coupons equivalent to the amount of fuel oil transferred "upstream" from the consumer to him.

Under no circumstances, it was pointed out, may the surplus oil be transferred to another consumer.



VITROLINER

Chimneys have gone into Defense Houses by the thousands, and are proud to be a vital part of the War Housing program for war workers.

Vitroliner has speeded up chimney construction to a standard and quality heretofore thought impossible. Vitroliner Chimneys are installed in only 20 minutes, and doubles the draft of a masonry chimney. Fully insulated with Fyrex prefabricated asbestos for complete safety.

Vitroliner pipe is also used to line masonry chimneys for oil or gas fired heating.

Write for details to:

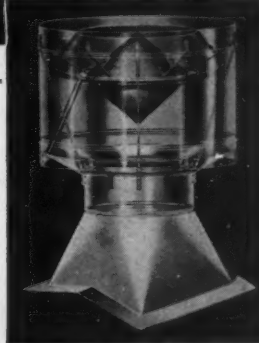


CONDENSATION ENGINEERING CORPORATION

2515 ARCHER AVENUE • CHICAGO, ILL.
PHONE CALUMET 4382

**You'll Find
What You
Need in**

BURT Ventilators



The complete Burt line supplies a type and a size for every roof ventilator job. Scientific design and quality materials make Burt roof ventilators the most satisfactory in every particular. You can give your customer "More Air per Dollar" in any type he may specify. Burt Engineers are always glad to help with plans and estimates. Send for catalogs.

THE BURT MFG. CO.

ROOF VENTILATORS • OIL FILTERS
EXHAUST HEADS

301 Main St., Akron, Ohio

SEND
FOR CATALOGS

Burt Engineers
are glad to
help on plans



ATH-A-NOR

*The Aggressive
Dealers Choice*

ALWAYS

Yes, Ath-A-Nor Furnaces have been the choice of aggressive dealers for over 50 years, and will continue to be, after the duration when business returns to "as usual."

For the duration when furnaces **MUST** be replaced, use an Ath-A-Nor. You can be certain that it is the utmost in quality, economy and efficiency . . . will perform perfectly and assure you of a satisfied customer . . . and remember, collect all scrap metal and see that it reaches our government as speedily as possible.

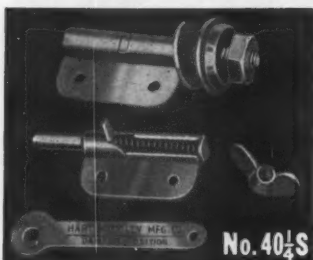
MANUFACTURERS OF QUALITY HEATING EQUIPMENT FOR OVER 50 YEARS

MAY-FIEBEGER COMPANY

NEWARK

OHIO

H&C DAMPER REGULATOR SETS



No. 40 $\frac{1}{4}$ S

ECONOMY TYPE. Three ways to install: 1. With lock nut but without handle (for tamper-proof setting). 2. With handle and lock nut. 3. With handle and wing nut. Nut prevents damper vibration. Handle always indicates position of damper (Patent 2,146,142). Furnished with handy snap end bearing. Complete set in carton. Made only with $\frac{1}{4}$ " bearings.

LIST PRICE.....No. 40 $\frac{1}{4}$ S.....\$0.30



No. 50 $\frac{1}{4}$

BRACKET TYPE. Nut holds damper securely, preventing vibration. Handle which indicates position of damper, may be left in place permanently or removed after adjustment (to prevent tampering). Snap End Bearing on $\frac{1}{4}$ " size, Solid Bearing on $\frac{3}{8}$ " size. Each set individually packaged.

LIST PRICES.....No. 50 $\frac{1}{4}$\$0.40
No. 50 $\frac{3}{8}$\$0.60



No. 80 $\frac{1}{4}$

DISK TYPE. Like all H&C sets, this set is equally adaptable to splitter or regular dampers. Snap End Bearing on $\frac{1}{4}$ " size, Solid Bearing on $\frac{3}{8}$ " size. All parts are rust proofed. Complete set in carton.

LIST PRICES.....No. 80 $\frac{1}{4}$\$0.40
No. 80 $\frac{3}{8}$\$0.60

See your jobber or write for literature and sample.

HART & COOLEY MANUFACTURING CO.

HOLLAND, MICH. • PHILADELPHIA OFFICE: 1600 ARCH ST.

Sale of AC Apparatus

OWNERS of air-conditioning equipment who sell this machinery for use by war industries will be paid the total cost, less depreciation, but including the full cost of original installation, the Office of Price Administration announces.

WPB is urging department stores, hotels, office buildings and other enterprises to sell such equipment, since new production cannot meet all the needs of war industries.

Amendment No. 55 to Maximum Price Regulation No. 136 (Machines and Parts and Machinery Services), provides that the maximum price for these sales shall be the installation costs of the equipment to the user plus the original cost less depreciation at the rate of 5 per cent per year.

The conversion program calls for the purchase of this machinery by its manufacturers, who will then recondition it for the use of the plant to which WPB has allocated it. The OPA action, which becomes effective November 27, 1942, permits the manufacturer to recover his total expenses, including inspection, dismantling, rebuilding and reconditioning, shipping and installation costs. In addition the manufacturers may add any out-of-pocket expenses incurred in such transactions plus a reasonable charge for engineering and risk and responsibility.

Manufacturers' charges for risk and responsibility and for engineering will be reviewed by OPA, as all manufacturers are required to submit a report of the transaction and the amount of profit to OPA. Unless OPA disapproves the transaction within 30 days, the price at which it is sold by the manufacturer will be considered to be automatically approved.

Temporary Gas For Trucks

(Continued from page 26)

the period from November 23, 1942, to December 31, 1942, inclusive. Such application shall be made on Form OPA R-536, and may be made by an agent. The applicant shall state the mileage and gallonage required for the operations of such motor vehicle from the date the ration is required to December 31, 1942, inclusive, and shall specify the address of the District Office of the Office of Defense Transportation with which the application for a Certificate of War Necessity has been filed, the date on which such application was filed, and the address of the Board with which his application, pursuant to Section 1394.7804 is to be filed. The applicant shall also state that no ration pursuant to Section 1394.7805 has been issued, and that he has received no notice of any action on his application for a Certificate of War Necessity for the vehicle or vehicles for which a ration is sought. The word "temporary" shall be clearly noted on the application.

(c) The Board shall determine the number of gallons of gasoline required during such period for the operation of such motor vehicle. The Board shall then issue "T-1" or "T-2" books containing coupons in sufficient number to provide the gallonage needed to December 31, 1942, inclusive. Such books shall expire at 12:01 a. m. on April 1, 1943.

65° Can Be Comfortable, If—

(Continued from page 38)

air is still. We should not, of course, return to the dark era of *no ventilation*.

2. Attention to Room Requirements

In homes and apartment houses, little or no attempt should be made to heat the bedrooms, except those occupied by infants, aged or ill persons. The bathroom should be kept warm and a schedule set up for dressing and undressing there so that bedrooms may be kept at temperatures not over 60° F. Provision should be made for warm night clothes and bed coverings.

Living rooms in which occupants spend most of their time should be kept at a suitable temperature at the expense of the dining room, halls and kitchen. Kitchen occupants usually are active and the room receives heat from the range and electrical appliances. Considerable heating oil savings can be effected by lowering the temperature to 50° at night [Editor's Note: If the house won't cool down to 50° during the night there is no point to reducing thermostat to 50°. Set thermostat only as low as house cools to. (Konzo, October AA, page 38)], and by the use of local zone radiant heaters, where electrical power is available. It should be kept in mind that, in general, temperatures may have to be regulated for an apartment house as a whole rather than for individual apartments.

3. Development of Adequate Health Habits

It is well to remember that reduced indoor temperature is less apt to injure persons in good physical condition than those who are not. It is more necessary to form good health habits now than ever before. Plenty of outdoor exercise, sunlight and wholesome nourishing food are most important. Adequate clothing and foot-covering should be worn. Over-fatigue should be avoided. "Early to bed" has both health and fuel-saving values.

4. Use of Additional Clothing

Indoor comfort and health during the cold months of the year depend just as much on (a) individual adjustments of clothing according to personal susceptibility to lower temperatures and drafts, as on (b) proper heating and ventilation. As far as reactions to cool moving air are concerned, double comfort standards between men and women, and even individual differences, actually exist and are due largely to differences in dress or clothing, although there may also be minor constitutional differences.

A temperature, with greater or lesser movement of the air, that is comfortable to men is as a rule too cool for women, and that which is acceptable to women is too warm for men. As a result, homes and buildings tend to be overheated in winter for the sake of women occupants. This fact is not surprising for a man's clothes weigh, on an average, about six pounds, while a woman's usually total about two. Clothing weights and texture may vary to a considerable extent in either group.

A heavier dress or suit, an extra undergarment or over-garment, when necessary, may make a great difference in comfort as far as body reactions to cool in-

H&C BEST BETS FOR WAR HOUSING GRAVITY INSTALLATIONS



No. 210 "NO-FLEX" FLOOR REGISTER

Sturdy, rigid and inflexible, all that the name "NO-FLEX" implies; with "heel-proof" mesh and highest standards of construction and workmanship evident in every detail. Use this finest of floor registers on all jobs requiring this type. It won't increase your costs one cent.

... and for baseboard installations use the No. 130 shown below; the best gravity baseboard register by any comparison and sold at competitive prices. Flexible-fin removable face, Metalustre finish, Low resistance. Excellent, too, for conversion jobs.

H&C is all set to furnish the ideal registers for every type of war housing installation in a hurry and at competitive prices. Consult us on your next project.



No. 130 BASEBOARD REGISTER (Removable Face)

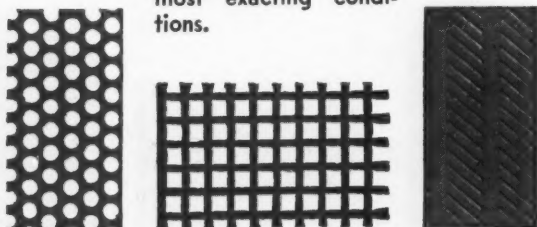
HART & COOLEY MANUFACTURING CO.

Warm Air Registers • Air Conditioning Grilles • Damper Regulator Sets • Dampers • Chain • Pulley
HOLLAND H&C MICHIGAN
Philadelphia Office 1600 Arch Street
Wests • Representatives: Godfrey, Burger Co., Los Angeles, San Francisco, Portland, Seattle, Salt Lake City, Denver

PERFORATED METALS

ARE ESSENTIAL In Times of War and Peace

They are used in the manufacture of explosives and ammunition, flame arresters, airplanes, battleships and in many important and essential industries such as the processing of grain, food products, chemicals, metals, coal, petroleum, etc. We make all sizes and shapes of holes to meet the most exacting conditions.

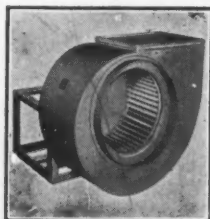


The
Harrington & King
PERFORATING CO.

5649 Fillmore St., Chicago, Ill. New York Office, 114 Liberty St.

YOUR BLOWER Requirements

AVAILABLE AT
Schwitzer-Cummins Company



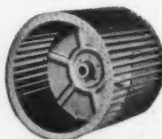
★ BLOWERS FOR EVERY PURPOSE

Double Inlet and Single Inlet

HY-DUTY Blowers, 9 3/4" to 25" • Top and Bottom Horizontal, and Top and Bottom Vertical Discharge • Top and Bottom

Motor Mounting • Dual Units also available.

★ **CENTER DISC WHEEL**—Double Inlet, Double Width • Reinforced Center Disc • Designed for Modern Air Conditioning and Heating Applications • Sizes, 4 1/2" to 50".



★ **ENGINEERING DATA**—Write for Catalogues showing complete Performance Data • Experienced Engineering Department available to help solve your Air Handling Problems.

BLOWER DIVISION
SCHWITZER-CUMMINS COMPANY
1145 EAST 22ND STREET INDIANAPOLIS, U. S. A.

door air are concerned. Every individual should realize that he is his own *clothing engineer*, and that he may do much to find winter health and comfort in spite of an overcool room. "Wear a sweater and help win the war" is a worth-while slogan, especially for women members of a household.

It is important for the public to understand that by a reasonable amount of extra clothing the body adjusts itself readily to temperatures at least ten degrees below what we in the United States consider the standard temperature for dwelling houses. Experiences of those in foreign countries attest to this fact. Some medical and public health authorities have indicated that not only would it be safe, but actually beneficial to keep temperatures quite a few degrees lower than the commonly accepted standard if additional clothing is worn.

Tires for Cars

ALL passenger cars will be eligible for recapping services or replacement tires under the national mileage rationing program effective November 22, but the number receiving new tires or recapping certificates will be limited by quotas to be assigned to War Price and Rationing Boards. The type of certificate issued will be determined by the amount of mileage allowed the applicant in his gas ration book and will be subject to the quota allocated to the applicant's rationing board.

In the event a local board receives more valid applications than it has quota to accommodate, it will have to decide among the applicants on the basis of relative importance to the war program, public health, and public safety.

To provide as much mileage as possible with a minimum use of rubber from the Nation's stock pile, emphasis will be put on recapping the tires now on cars.

The car owner whose gasoline allowance is 560 miles a month or less and whose tires are worn to the recapping point will be eligible for a certificate entitling him to get them recapped. If any of the casings are unfit for recapping, then he will be eligible for a certificate authorizing the purchase of a Grade III tire. Grade III tires, as defined in the regulations, are used tires, recapped tires, and new tires made of reclaimed rubber.

A passenger-car owner who gets gasoline for more than 560 miles but less than 1,000 will be eligible for a recapping job if his tire carcass is recappable. If it is not, he will be eligible for a certificate for a Grade II tire. This grade includes tires with a retail list price no higher than 85 percent of the price for standard Grade I casings. It also includes damaged new tires, "factory seconds" as marked by the manufacturer, and all new tires manufactured before January 1, 1938. "Changeover" tires also are Grade II. A "changeover" is a tire which has gone less than 1,000 miles but has been run sufficiently to wear off the mold marks.

Car owners with monthly allotments in excess of 1,000 miles will be eligible for recapping, or, if their casings are not recappable, for Grade I tires.

All mileage book holders will be eligible for inner tubes.

War Housing Construction Standards

(Continued from page 35)

F. The use of softwood finished flooring or softwood sub-flooring is prohibited.

G. Roof sheathing under wood shingles shall be spaced in accordance with the shingle exposure but with a minimum space of 2" between the shingle lath or sheathing.

H. Beveled siding up to and including 8" in width is the only wood siding permitted.

I. Purchase specifications shall not restrict the moisture content.

6. Heating plants shall not exceed the following limits:

A. For one, one and one-half, and two-story structures, consisting of single-family detached, semi-detached, and row dwellings and multi-family flats or row type dwellings:

(1) Where heat loss of dwelling unit is less than 40,000 Btu, one of the following units may be used:

- (a) One floor furnace per dwelling unit.
- (b) One pipeless furnace per dwelling unit.
- (c) One space heater per dwelling unit.
- (d) One chimney heater range.

(2) Where heat loss of dwelling unit in one-story structures is 40,000 Btu or more, and for any heat loss permitted by the Housing Critical List in two-story structures, one of the following units may be used:

- (a) One gravity distribution furnace per dwelling unit.
- (b) One space heater per dwelling unit.
- (c) One chimney heater range per dwelling unit.
- (d) One chimney furnace or other forced circulation warm air furnace per dwelling unit in basement-less one-story 3 bedroom dwelling units and in any basement-less two-story structure.
- (e) One floor furnace per dwelling unit. Additional floor furnace may be authorized, if necessary, but not in excess of the heat loss limitations established by the War Housing Critical List.

B. For one and two-story structures, excluding two-story row type dwelling units, where each heating system serves four or more dwelling units, and where less than 25% of the dwelling units in such structures are lower than two stories, one of the following units may be used:

One pipe steam or one pipe forced hot water system with radiators provided that the weight of the system shall not exceed the weight determined by the following formula allowing the heat loss of 66 Btu per square foot of dwelling area:

Net Btu Loss of Structure:	Pounds of Metal per 1000 Btu
Up to 175,000	37
175,000 to 250,000	36
250,000 to 350,000	35
350,000 to 500,000	34
500,000 to 700,000	33
Over 700,000	32

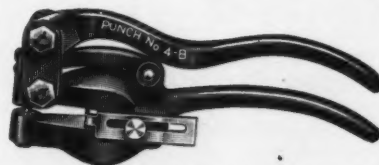
C. For Dormitory type apartment structures:

- (1) Forced circulation warm air furnace system.
- (2) One pipe steam or one pipe forced hot water system with radiators.

D. For dormitory structures:

- (1) Forced circulation warm air furnace system.

WHITNEY LEVER PUNCHES



**NUMBER
FOUR "B"
PUNCH**

This punch for sheet metal work has a capacity of $\frac{1}{4}$ " through 16 gauge. Weight 3 lb. Length 8 $\frac{1}{2}$ ". Depth of throat 2". Complete tool includes three punches and three dies of specified sizes with die adjusting key. A time-saver for your up-to-date shop.



**NUMBER TWO
PUNCH**

And here's another handy tool for the modern shop—the No. 2 Punch. Length 23". Capacity 5/16" through $\frac{1}{4}$ " iron, weight 12 lbs., depth of throat 1-11/16". Punches and dies 3/32" to $\frac{1}{2}$ " by 1/64".

W.A. W
WHITNEY MFG. CO.
636 RACE ST. ROCKFORD, ILL.

**Today's War-Time
Industrial Market
is Your
BEST BET NOW**

**—LET CLARAGE EQUIPMENT
HELP SELL THE JOBS!**

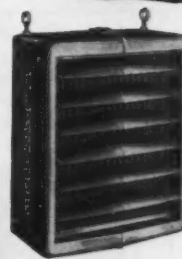
New war plants—and plants being converted—need heating, ventilating, exhaust and blow pipe installations. This high priority business can be your salvation. Specify Clarage Fans, Blowers, Unit Heaters—Nationally known and Nationally accepted, these highest quality air handling products help you land the jobs. Write for any information desired.



EXHAUST FANS



VENTILATING FANS



UNIT HEATERS

COMPLETE
AIR CONDITIONING
• COOLING
• VENTILATION
• FACTORY HEATING
• MECHANICAL DRAFT

FANS and BLOWERS
for
INDUSTRIAL NEEDS

CLARAGE FAN COMPANY—KALAMAZOO, MICH.
SALES ENGINEERING OFFICES IN ALL PRINCIPAL CITIES



Your Eligibility For Tires

(Continued from page 44)

of the Eligibility Classification:

- (a) On a passenger car used principally to provide one or more of the following transportation services:
 - (2) Transportation of persons to enable them to render construction or mechanical, structural, or highway maintenance and repair services.
 - (1) Certificates may be granted under this paragraph to persons who require automobiles to transport them between places where construction or mechanical, structural, or highway maintenance and repair services are needed.

After this, there remains the problem of eligibility of cars used by non-installing foremen, superintendents and executives of the business for tires. This problem is not covered specifically in the regulations and must be fought out with your local board. No blanket ruling has been given.

Stop Boiler Production

PRODUCTION of low pressure cast iron boilers built to use exclusively oil or exclusively gas for fuel was prohibited November 7 by the War Production Board. Production of other cast iron boilers is prohibited unless they are used for essential purposes.

The Order, L-187, defines a low pressure cast iron boiler as one designed for hot water or steam heating

operated at a maximum working pressure of 15 pounds per square inch for steam, or 30 pounds per square inch for water.

This type of boiler is widely used both for industrial and domestic heating plants.

Boilers not using exclusively oil or exclusively gas for fuel can be produced only for specified military purposes, or for use in hospitals already constructed or to be constructed in the future. Both of these permitted uses are subject to authorization of the Director General for Operations on PD-704.

Production of repair and replacement parts for any cast iron boiler is not restricted by today's action.

Kruckman — 1943 Housing Program

(Continued from page 21)

themselves in readiness for these projects, should do two things in connection with FPHA jobs: first, write to Charles Aldredge, Chief Inquiry Service, Federal Public Housing Authority, Longfellow Building, Washington, D. C., and ask to be placed on the mailing list for all announcements of projects assigned to the Regional Offices for investigation; the announcements of invitations for bids and the opening dates; and the announcement of awards. Each month also FPHA sends out a recapitulation of these various data. The manufacturer or contractor who receives all these releases is in a position to follow through on any project in which he is interested.

The second thing he should do is to get acquainted with his nearest FPHA Regional Office. They are located in Boston, New York, Washington, Atlanta,



E-Z-ON damper regulators

Approved for DEFENSE HOUSING

You save on CRITICAL MATERIALS, on time and labor cost—and make a more secure, rattleproof installation when you use E-Z-ON Damper Regulators. Even APPRENTICE labor can install them in HALF the usual time! These are only a few advantages that recommend E-Z-ONS for War-time Heating Systems. Best jobbers everywhere stock them.

M. A. GERETT CORPORATION

2947 North 30th Street, Milwaukee, Wisconsin

REPAIR PARTS FOR ALL MAKES STILL AVAILABLE



With priorities restricting sales of new equipment, repair business is more essential than ever. PEERLESS dealers can still depend upon prompt deliveries of repair parts for ALL MAKES AND AGES of furnaces. Get the repair business now and you'll be all set to get the new jobs after the war. PEERLESS builds warm air heating equipment in all sizes, including heavy duty units for the largest buildings. Write for dealer proposition and repair parts catalog.

PEERLESS FOUNDRY CO., 1853 Ludlow Ave., INDIANAPOLIS

"BEND-EZY"

REGISTERS LOW COST EFFICIENT DURABLE

PERFECT FOR DEFENSE PROJECTS




STANDFORATED

PERFORATION OF ALL METALS

STANDARD

3137 W. 49th PLACE

AIR CONTROL GRILLES

WRITE FOR CATALOG! Complete information on BEND-EZY Registers, STANDFORATED Grilles, Industrial, Ornamental Perforations, Stampings.

STAMPING & PERFORATING CO.

CHICAGO, ILLINOIS

Cleveland, Chicago, Kansas City, Ft. Worth, Seattle and San Francisco. The officials in these offices will tell him the names of the architects who prepare the plans, and the names of contractors who handle the jobs. Most of the jobs are done by lump-sum contracts. Information also may be secured by keeping in touch with the offices of the Federal Housing Administration, located in many communities scattered around the United States. They know about the prospective private war housing.

There are so many unknown equations about the war housing building program that stem from uncertainty about materials, and from the vagaries of the workers themselves in their choice of quarters, plus the need of accommodations quickly, that it is the special and specific job of the Homes Use Service to secure conversion of existing homes, in war-work areas, into quarters for the workers. There is no compulsion about the conversion, yet; but it is expected among NHA people themselves that it will be necessary to ask the next Congress to supply the legislation to requisition homes and other buildings for conversion.

Old Building Conversion

At present, those who wish to convert their homes or buildings, get in touch with the War Housing Center nearest to them, or write to the Homes Use Service, National Housing Agency, Washington, D. C. The letter is turned over to the Home Owners Loan Corporation office in the vicinity of the applicant, and HOLC inspects the house and works out the terms of the lease. Bids for the conversion items will be taken locally by HOLC. The owner gives a lease for seven years, or for two years after the war ends, which ever is longer. The HOLC collects the rents, the rents being comparable to rents for similar accommodations in the community. Before transmitting to the owner his net income, HOLC deducts the estimated annual operating costs; the annual carrying charges, such as taxes, insurance, mortgage payments and the like; and the monthly prorata of the annual one-seventh of the estimated cost of the conversion. Under the Lanham Act, legal foundation for the funds used, housing loans may be repaid in seven years.

The HOLC employs the architect who makes the plans for the remodeling, and the HOLC furnishes the supervision and manages the property. At the end of the lease the improvements belong to the owner. Larger buildings are handled directly by the FPFA. The agency is searching the country over for office buildings, old hotels, theaters, warehouses, and similar structures that may be converted into war housing. In Mobile, FPFA took over—on lease—an office building and converted it into 200 dormitory units. Showers were installed, the heating facilities were expanded, new partitions were placed in the rooms, the floors were refinished, and considerable painting and similar work was done to make the place attractive.

It is estimated the average cost of conversion will be held within \$400 a room for all jobs. All construction materials and equipment are obtained under the terms of PD-200 for wholesalers, together with the materials list detached from Form PD-105. The work comes under a preference rating of AA-4. HOLC and FPFA as well as FHA apparently process all applications in the field in order to get speed.

LONG WEARING BEARINGS FOR WAR-TIME NEEDS



Randall self-aligning, self-lubricating Pillow Blocks and Graphite Bronze Bearings are answering many manufacturing problems under war-time pressures. If you have a bearing problem it might be solved through a discussion with Randall bearing engineers. Write us for full details or ask for catalog and complete information.

**RANDALL GRAPHITE PRODUCTS
CORPORATION**
DEPT. 1211 609 W. LAKE ST. CHICAGO, ILL.

KEEP 'EM FIRING

with *Gar Wood*

- ★ Self-Contained Forced Warm Air Automatic Oil-Fired Heating Units, (from 50,000 to 500,000 B.T.U./Hr.)
- ★ Industrial Space Heaters up to 500,000 B.T.U./Hr.
- ★ Boiler-Burner Units up to 25 HP.

Some Distributors and Dealers are receiving Government business for Heating Equipment. If you are one of those who are called upon to submit estimates, heating plans and surveys, we suggest you enlist our cooperation and our engineering service.

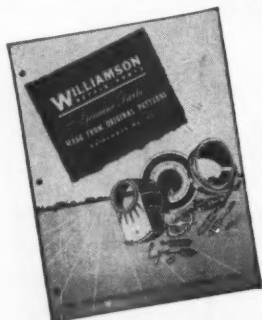
Write today for "ENGINEERING STANDARDS"—this valuable 72-page book on Engineering, Installation and Operation of Heating Systems, sent free on request to Sheet Metal Contractors and Dealers, Engineers and Architects. This offer made for a limited time only. Address reply to Dept. 14

HEATING DIVISION
GAR WOOD INDUSTRIES, INC., DETROIT
Protect Freedom—Buy War Bonds

Williamson Representatives Helping in Many Ways

Our representatives are at your service. They are familiar with all government regulations pertaining to the heating business. You can rely on them to give you the correct answers about any problem that affects your business. Use them.

NEW:--Williamson now operates a 24-hour furnace parts repair service. Ask your jobber about this service, or get in touch with us direct.



★
FREE!!

SEND FOR THIS
WILLIAMSON
REPAIR PARTS
CATALOG TODAY

★
Address Dept. 2

**THE WILLIAMSON
HEATER COMPANY**
CINCINNATI, OHIO

CHENEY
Protected METAL

As a means of identification we have adopted the above new trade mark for CHENEY Protected Metal.

A PROTECTED STEEL SHEET. Special slate-pitch coating makes it moisture-proof, weather-proof and will resist heat up to 230° F. Will not crack or peel. Meets gov't specifications.

CHENEY "Protected" METAL is tough. It can be sheared, bent in hand brake, Pittsburgh locked, malleated, riveted and worked with regular shop tools.

Forms easily into warm air heating or ventilating ducts, counter flashings, valleys, metal roofs, downspouts. Adaptable to all general sheet metal work.

Available for immediate shipment from stock in 26 gauge 36" by 96" sheets. Send for Application Folder.

CHENEY METAL PRODUCTS CO., 34 Oxford St., TRENTON, N. J.

BARBER
Gas Pressure
REGULATORS

Sizes 1/4" up

Certified by
A. G. A. Testing
Laboratory

Write for Prices

THE BARBER GAS BURNER CO.
3704 Superior Ave., Cleveland, O.



Somewhere between 600,000 and 700,000 dwelling units are expected to be supplied to war workers by conversion. There is some adjustment or expansion or even new installation of heating facilities connected with every conversion. By reason of the restrictions on fuel, the vast majority are expected to use some form of warm air heating. In many instances forced warm air will be installed.

The whole problem of conversion, or building of housing, or any other form taken in furnishing the shelter for war workers, is conditioned by labor as well as by materials, and by the need for speed. Where the need for shelter is most urgent, trailers are used as a stop-gap. Upwards of 30,000 trailers are now programmed to be used in war areas. Sometimes they remain for the duration of the job, and sometimes they are supplanted by other housing that is built or made by conversion. When the need is urgent, but not immediate, demountable dwellings are erected. Most of the structures are manufactured in the area.

The production of prefabs is conditioned by the availability of materials, but they are regarded with enthusiasm, by many Government people because they do not require much labor to erect. In theory they are moved after there is no longer any use for them. Miners of war metals in Arizona, Colorado, Idaho, New Mexico, Nevada, Utah and Wyoming need 2,000 dwellings. NHA has allocated \$6,000,000 for this housing. It is possible that prefabricated units may be used.

Army-Navy Probable Program

Army and Navy always are extremely shy about giving information. In these times they invoke the need of military secrecy. If you wish to know what housing is being built within your area at military communities—including flat camps, Army idiom for the WAACS—find the office of the nearest U. S. Engineer Corps Area, or District. The Area is under the District. Each office has an engineer or architect officer especially assigned to the type of housing to be built for civilian employees and similar needs. There is considerable building going on at the camps and cantonments and bases and depots and stations in providing quarters for officers and soldiers as well as for civilians. Generally speaking the building for the military is more permanent. It is understood they are still using steel for the furnaces that are built of masonry in civilian jobs. They heat by steam, warm-air, and hot water. There is a large increase in the use of forced warm-air, especially in barracks, and in officers' quarters. Most of the equipment is bought in the field, frequently as part of a prime contract. The advice here is to keep in touch with the field offices, and to write to the Materials and Equipment Section, U. S. Engineer Corps, War Department, Washington, D. C. Send a catalog, or some evidence of the equipment you manufacture or install. Ask to be placed on the mailing list for specifications, and you will be advised concerning all prospective jobs.

There are now 398 areas in the United States where there is war work, or where war work is imminent. These areas are located in every State. It is not feasible to list every community which is producing for the war and which has a prospective war housing program. The following list has been certified for some kind of war housing program by NHA.

Alabama—Childersburg; Mobile; Lanett; Tuskegee; Chambers County; Macon County.

Arizona—Morenci; Bisbee; Miami; Globe; Tucson; Higley; Glendale; Mesa; Gila County; Maricopa County; Pima County; Yuma County; Douglas.

Arkansas—Bauxite; Ft. Smith; Pine Bluff; Sebastian County; Stuttgart; Arkansas County; Prairie County; Little Rock; Jones Mill; Hot Springs; Texarkana.

California—Hamilton Field; Pittsburgh; Antioch; Upland; San Diego; Santa Barbara; Chico; Butte County; Lemoore; Hanford; Kings County; Merced; Merced County; Modesto; Stanislaus County; Visalia; Tulare; Tulare County; San Francisco; Los Angeles; Bellflower; Inglewood; Long Beach; South East Cities; Oakland; Richmond; Berkeley; Alameda; Barstow; Fairfield; Suisun; Marin County; Solano County; Contra Costa County; Monterey; Zenecia.

Colorado—La Junta; Leadville; Eagle County; Lake County; Summit County.

Connecticut—Hartford; New Haven; Middletown; New Britain; Bridgeport; New London; Bristol.

Delaware—Newark; Wilmington; Dover; Seaford; Kent County; Sussex County; New Castle County.

District of Columbia—Twenty different building projects.

Florida—Marianna; Key West; Tampa; Panama City; Apalachicola; Franklin County; Gulf County; Banana River; Brevard County; Jackson County; Jacksonville; Fort Myers; Pensacola.

Georgia—Brunswick; Athens; Clarke County; Franklin County; Savannah; Bainbridge.

Idaho—Coeur d'Alene; Pend Orielle; Bonner County; Kootenia County.

Illinois—Chicago; Madison County; East St. Louis; Rosiclare; Decatur; Rockford; Seneca; Heroin; Marion; Springfield; Fulton County.

Indiana—Burns City; Evansville; Terre Haute; Clinton; Adams County; Muncie; Anderson; Grant County; Howard County; Madison County; Jackson County; Indianapolis; South Bend; Delaware County.

Iowa—Cedar Rapids; Linn County; Pottawattamie County.

Kansas—Salina; Parsons; Liberal; Seward County; Dickinson County; McPherson County; Ottawa County; Saline County; Wichita; Finney County; Topeka.

Louisiana—North Baton Rouge; Shreveport; East Feliciana Parish; West Feliciana Parish; Alexandria.

Maine—Portland; Bath; Bangor; Biddeford; York County; Penobscot County; Presque Isle; Aroostook County.

Maryland—Elkton; Bethesda; Calvert; Suitland; Baltimore; Fairway Tract; Phillips Tract; Calvert Houses; Cedar Point.

Massachusetts—North Weymouth; Boston; Springfield; Barnstable County.

Michigan—Inkster; Detroit; Wayne; Grand Rapids; Muskegon; Kalamazoo; Battle Creek; Kent County; Ottawa County; Muskegon County; Kalamazoo County; Calhoun County; Port Huron; St. Clair County; Snohomish County; Ypsilanti.

Mississippi—Pascagoula; Jackson; Centerville; Adams County; Amite County; Pike County; Wilkinson County; Greenville; Washington County; Hinds County; Madison County; Rankin County; Aberdeen.

Missouri—St. Louis; Sedalia; Johnson County; Pettis County.

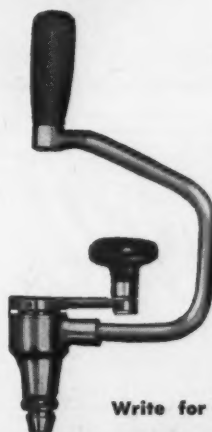
WHITNEY-JENSEN PRODUCTS

30 YEARS EXPERIENCE



AIRCRAFT RIVET SQUEEZERS

Standard, Alligator, Crab, Snake Head, and Pelican types for speedy, accurate, uniform setting of aluminum rivets up to 5/32" size. Pelican type (shown) in 6 sizes from 1 3/4" to 6" throat-depth, other types in a total of 25 different sizes. REDI-SET model has interchangeable and adjustable dies for several styles of rivets.



BLIND RIVET PULLER

For setting various kinds of stem or mandrel-type blind rivets. Chuck pulls directly on center with full bearing around head of rivet. Handle can be removed if necessary for work in close quarters, also crank can be replaced by handwheel. Ball bearing construction and other features insure durability. For brazier or flush rivets in 1/8", 5/32", and 3/16" sizes.

Write for Whitney-JENSEN Aircraft Tools Catalog.

WHITNEY METAL TOOL COMPANY

91 FORBES ST. • ROCKFORD, ILL.

Write for
Catalog and
Prices



SPEED UP ORDERS with a BEVERLY SHEAR

Throatless shears that cut any shape . . . straight, round or irregular. FASTER—no distortion! Precision accuracy! Order No. 1 for 14 gauge. No. 2 for 10 gauge. No. 3 for 3/16 inch mild steel and 10 gauge stainless.

BEVERLY SHEAR CO.
3008 W. 110th PL, Dept. 1
CHICAGO, ILL.

Leader

KOOLSTACK FURNACES

FOR STOKERS
OIL or HANDFIRED

50,000 to 200,000 BTU's
Patented D a m p e r
Uses All the Heat
in the Added Heat-
ing Surface

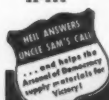
THAT
IS SOMETHING
TO SELL

LEADER IRON WORKS, Inc.
Decatur Illinois

HEIL IS THE NAME TO REMEMBER
— for oil burners . . . oil-designed
furnaces and boilers that assure you of:

- ✓ Satisfied, loyal customers
- ✓ Minimum service trouble
- ✓ Efficient, economical operation
- ✓ Design features that sell
- ✓ Profitable manufacturer-dealer relations

H-1A



THE HEIL CO.

GENERAL OFFICES: MILWAUKEE, WISCONSIN

Tampico
CHICAGO FILTER CO.
JOLIET, ILL.
FILTERS

Bremil
PORTABLE SHEARS



Your work will proceed faster and neater when you use Bremil Portable Shears on the job or in the shop. Write today for literature showing complete line.

ALL-ALLOY No. 2 cuts up to 1/4" steel plate.
ALL-ALLOY No. 1 cuts up to No. 11 gauge strip or sheet.
Special blades may be obtained for shearing stainless steel.

BREMIL MFG. CO., ERIE, PA.



ON ACTIVE DUTY!
— **BUT STILL AT YOUR SERVICE!**

Because R & G Products are reporting for duty on scores of war jobs, they are necessarily limited for civilian use. However, our officers are always available for consultation on any problem within our scope.



REGISTER & GRILLE
MANUFACTURING CO., Inc.
74 BERRY STREET BROOKLYN, N. Y.

CHICAGO STEEL BRAKE



BEST BY FORTY-TWO YEARS TEST

DREIS & KRUMP MFG. CO.
7404 LOOMIS BLVD. CHICAGO

NEW LECTRO-SHEARS

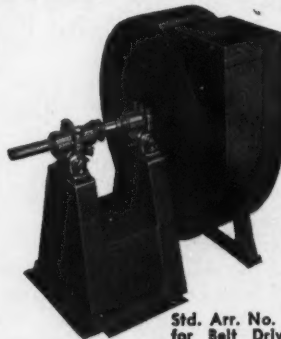
Cut Metal, Faster, Easier



Black and Decker's new, redesigned Portable Lectro-Shears cut all types of sheet metal quickly, accurately . . . on a radius as small as 1/4". Cutting operation always visible. New, improved operating handles provide better balance, easier control on curves and irregular lines. Cut up to rated capacity in steel, galvanized iron . . . 50% greater in non-ferrous metals. Ball-bearing equipped. Universal motor, designed for high speed, trouble-free service. Two sizes—15 and 16 gauge. No. 16 handle equipped with instant release trigger switch and locking pin for continuous operation. See your Black and Decker Distributor, or write direct to: The Black & Decker Mfg. Co., 732 Penna. Ave., Towson, Md.

Leading Distributors Everywhere Sell

Black & Decker
Portable Electric TOOLS



New and improved "EX" Fans are now available in standard sizes from No. 15 to No. 80 and from 200 to 30,000 CFM Capacity with pressures up to 15" W.G. These fans are commonly used for exhaust problems to handle dust, fumes, shavings, etc., but can be adapted for forced draft service.

"EX" Fans are furnished in all standard arrangements of the N.A.F.M. The design is such that it can be easily modified to suit special assemblies, thus "EX" Fans are ideal for resale purposes, as part of factory assembled units.

Std. Arr. No. 1
for Belt Drive

Write us about your problems. Send for Bulletin No. EX-41
BAYLEY BLOWER COMPANY
1817 South 66th Street Milwaukee, Wis.

YESTERDAY
Payneheat
for the
homes of
America.

TODAY
Precision
parts for
the arms of
Democracy.

TOMORROW
Still finer
furnaces for the
gas industry's
post-war
expansion.

PAYNEHEAT

Payne FURNACE & SUPPLY CO., INC., BEVERLY HILLS, CALIFORNIA

Nebraska—Hastings; Lincoln; Omaha; Lancaster County; Douglas County; Sarpy County.

Nevada—Reno; Washoe County.

New Hampshire—Portsmouth; Rockingham County; Strafford County.

New Jersey—Camden; Paterson; Jersey City; Asbury Park; Bridgeton; Millville; Cumberland County; Cape May; Newark; New Brunswick; Red Bank.

New York—Massena; Elmira; Utica; Niagara Falls; Staten Island; Tonawanda; Greenport; Buffalo; Poughkeepsie; Dutchess County; Orange County; Ulster County; Watertown; Syracuse.

New Mexico—Alamogordo; Albuquerque; Otero County; Bernalillo County; Eddy County; Luna County.

North Carolina—Holly Ridge; New Bern; Morehead; Wilmington; Durham; Henderson; Vance County; Laurenburg; Richmond County; Scotland County; Robeson County; Elizabeth City.

Oregon—Portland; Vancouver; Ft. Stevens; Medford; Madras.

Oklahoma—Enid; Chickasha; Caddo County; Grady County; Garfield County; Oklahoma City; Tulsa.

Ohio—Windham; Sandusky; Warren; Toledo; Massillon; Akron; Vandalia; Moraine City; Fairfield; Osborne; Dayton; Lorain; Findlay; Fostoria; Hancock County; Seneca County; Mt. Vernon; Knox County; Canton; Marion; Cleveland; Elyria.

Pennsylvania—Emporium; Cameron County; Milton; Montour County; Northumberland County; Snyder County; Union County; Williamsport; Beaver; Allentown; Bethlehem; New Castle; Reading; Pottstown; Ambridge; Pittsburgh; Midland; Erie; Chester; Johnstown; Uniontown; McKeesport; Allegheny; Philadelphia County; York; Columbia County; Knox County; Upland; Delaware County; Washington County; Hatboro; Sharon; Farrell; Groveton; Coatesville; Berks County; Harrisburg.

Rhode Island—Providence.

South Carolina—Charleston; Greenville; Marlboro County; Sumter County; Sumter; Congaree.

Tennessee—Nashville; Copperhill; McClaysville; Folk County; Dyersburg; Crockett County; Dyer County; Lauderdale County; Murfreesboro; Rutherford County; Davidson County; Kingsport; Tullahoma; Clarksville.

Texas—Palacios; Lubbock; Morris County; Red River County; Titus County; Victoria; Victoria County; Amarillo; Corpus Christi; Ft. Worth; Houston; Waco; Texarkana; Galveston; Orange; Austin; Hays County; Travis County; Williamson County; Big Spring; Howard County; Bonham; Fannin County; Childress; Childress County; Daingerfield; Camp County; Cass County; Camp Hood; Borger.

Utah—Ogden.

Virginia—Arlington; Jefferson Davis; Glebe Road; Arlington Farms; Newport News; Norfolk; Alexandria; Quantico; Richmond; Portsmouth; Columbia Pike; Henrico County.

Washington—Ephrata; Everett; Port Orchard; Bremerton; Seattle; Ruston; Keyport; Renton; Tacoma; Island County; Spokane; Kirkland; Vancouver.

West Virginia—Charleston; Kanawha County.

Wisconsin—Superior; Sturgeon Bay; Manitowoc; Oshkosh; Fond du Lac; Fond du Lac County; Winnebago County; Madison; Merrimac; Milwaukee.

Wyoming—Cheyenne.

Kentucky—Hardin County.

SPOT WELD

WITH AN

ACME "Hot Spot" WELDER

Proven utility for over 26 years in thousands of sheet metal fabricating plants.

Write for Literature and Prices.

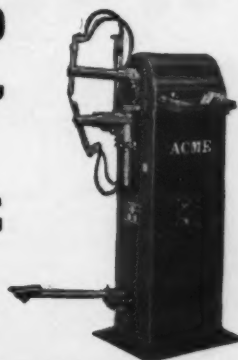
Complete Range of Sizes

Lifetime Guarantee!

ACME ELECTRIC WELDER CO.

2618B Fruitland Road

Los Angeles, Calif.

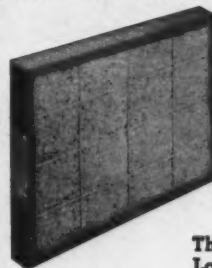


THERMO-DRIP HUMIDIFIERS



They're heat controlled! That's your greatest assurance that the heat produced by your customers' furnaces will be properly tempered with moisture—and what a vast difference that will make in building goodwill and sales for you.

AUTOMATIC HUMIDIFIER CO.
18th and Main Streets
CEDAR FALLS, IOWA



AXIOM AIR FILTER

The result of fifteen years experience
Lower in cost — Higher in quality
Huge dust capacity—low resistance
Prompt delivery assured
Order now

BLOCKSOM & COMPANY, MICHIGAN CITY, INDIANA

Repair parts FOR ALL HEATING UNITS



A. G. BRAUER SUPPLY CO.

Distributors of All Heating and
Air Conditioning Equipment

2100 Washington Ave. St. Louis, Mo.

★ War Time Trade News ★

GILCO

Automatic

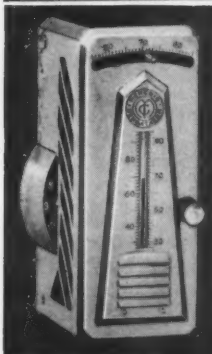
FURNACES and WATER HEATERS



J. L. GILLEN CO.

DOWAGIAC • • MICH.

A MERCOID FUEL SAVER



An inexpensive fuel saving thermostat, recommended to replace regular thermostats on all automatically fired heating equipment or damper motors.

With the Mercoid Day-Night Control there are no chilled rooms before retiring. You control the thermostat instead of it controlling you. A simple twist of the hand and it is set for a lower temperature while asleep, and in the morning before arising, the day temperature is automatically restored.

It meets wartime fuel economy requirements, besides it has a Mercoid corrosion-proof mercury switch, insuring longer control life and better performance.

The Mercoid Corporation
4209 Belmont Avenue, Chicago, Ill.

Syncromatic

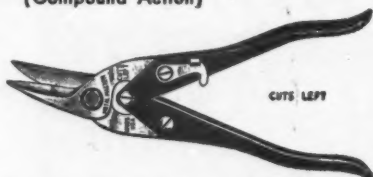
T. M. REG.

**COAL AND OIL
GRAVITY AND FORCED AIR
STEEL FURNACES**

3373 NO. HOLTON ST., MILWAUKEE, WIS.

WISS "METAL-MASTER" SNIPS

(Compound Action)



"TWICE
THE WORK
WITH HALF
THE
EFFORT"

TWO MATCHED PATTERNS M1 (Cuts Left) M2 (Cuts Right) Cut circles, squares and any irregular patterns on Stainless, Dural and Monel Metals with the greatest of ease. Jaws of wear-resisting Manganese Molybdenum Steel. Handles hot-pressed from tough Chrome Vanadium Steel. Nickel steel bolts and nuts to Government specifications. All parts interchangeable. Detachable rubber handle grips at slight extra cost.

J. WISS & SONS CO.

ESTABLISHED 1848

NEWARK, N. J.

American Brass Company plants at Ansonia, Torrington and Waterbury, Conn., were awarded the joint Army-Navy "E" for excellence in war production on Friday, November 6. These plants received the Navy "E" on May 6 last so that the joint award on Friday constitutes a renewal of the award.

At the time of the previous ceremonies, 48 employees who have served over 50 years with the company received special recognition, among whom was John A. Coe, chairman, who has been with American Brass for over 57 years. Since the May 6 ceremony, six more men in the Connecticut plants have completed 50 years of service.

In order that production schedules be not interfered with, no formal ceremony was held. The Labor-Management War Production Drive Committee, however, will raise the "E" pennants and each employee in the mills and offices will receive a copy of a folder containing a letter from Adm. H. A. Wiley, USN (Ret.), Chairman of the Navy Board of Production Awards, and a message from Clark S. Judd, president of American Brass.

Minneapolis - Honeywell Regulator Company, Minneapolis, has supplied heating and ventilating controls for more than 500 theatres built on domestic army bases. The theatres, according to John E. Haines, M-H official, seat from 600 to 1000 soldiers each, and are heated and ventilated with standard equipment.

Viking Air Conditioning Corporation, Cleveland, Ohio—M. I. Levy, President—reports that at present their business is approximately 85 per cent war work.

The company has recently added some special machinery for the purpose of handling heavier gauge material and has increased their welding space considerably.

In addition to a large number of fans and blowers being supplied for cantonments and war plants, the major part of the company's business now consists of welded steel parts of all kinds. In particular, they have made parts for a large number of the M-4 Medium Tank and various parts for pontoon bridges.

Milcor Steel Company salesmen are in various jobs:

C. A. Meroney, Milwaukee, is now with the War Production Board, Atlanta, Ga.

Harry Beauvais, Milwaukee, is now with U. S. Rubber Company, Des Moines Ordnance Plant, Des Moines, Iowa.

A. F. Rich, Milwaukee, is now District Supervisor, Machinery Division, OPA, Denver, Colorado.

R. R. Schilling, Kansas City, is now Priorities Representative, Boeing Airplane Co., Wichita, Kansas.

L. R. Wise, Chicago, is now Expeditor of Orders, U. S. Engineering Procurement Division, Room 516, Merchandise Mart, Chicago, Illinois.

R. K. Meroney, Chicago, is now with Bates & Rogers Construction Co., and Chas. W. Cole



CHOOSE:

BONDS or BONDAGE

Buy U. S. War Bonds



With manufacturing facilities converted 100% to War Production, our research department is devoted to designing improved units to be added after V day to the complete CONCO line.

CONCO

CORPORATION
Div. of H. D. Conkey & Co.
MENDOTA, ILLINOIS

★ War Time Trade News ★

& Sons, Ordnance Plant, Illiopolis, Illinois.

D. L. Rossiter, Canton, Ohio, is now with the Production Engineering Section, Material Division, U. S. Army Air Force, Civilian in Charge of Pursuit Planes, 2024 Mayfair Road, Dayton, Ohio.

R. F. Brown, Canton, Ohio, is now Head Materials Estimator Requirement Branch, Industrial Planning Division, War Department, Air Corps-Material Division, Steele High Building, Dayton, Ohio.

F. E. Barr, Canton, Ohio, is now in the Navy. Mail may be sent to his home address: 1205 Lincoln Avenue, Tyrone, Pa.

W. D. Crawford, Baltimore, Md., is now in the Steel Section, War Production Board, Washington, D. C.

L. R. Campbell, Baltimore, is now with the U. S. Maritime Commission, Construction Division, Washington, D. C.

Charles P. Boyd & Co., Inc., Philadelphia, reports that about 85 percent of their present business consists of war orders. They are doing sub-contract work for airplane companies.

Charles M. Boyd II, vice-president of the company, is now a Lieutenant in the U. S. Army. Other employees in service are: **Albert A. Aichroth**—formerly a shipper—is now A. M. M. 3/c U. S. Navy. **William A. Glifort, Jr.**, formerly a machinist, is now in the U. S. Army Air Force.

The company has added a fully equipped machine shop, oxy-acetylene and electric welding equipment in addition to their stamping department.

York Ice Machinery Corporation, York, Pa., is flying the Minute Man flag. **W. S. Shipley**, chairman of the board, is a member of WPB's Smaller War Plants Corporation, and the following new officials have replaced men now in service:

J. C. Tweedel, General Sales Manager

John Carr, Export Sales Manager

The company has lost many former employees to Army, Navy, Marine or Government service.

Currently, approximately 97.5 percent of present business consists of war orders.

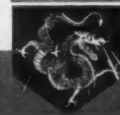
Practically all air conditioning and refrigeration equipment now being produced is for wartime application, either directly to the services or indirectly to manufacturers producing war material. The company is handling certain types of extraneous work for which their production facilities are especially adapted, including ordnance material, large foundry work, stratospheric test chambers.

Owens - Corning Fiberglas Corporation, Toledo, is four years old, and factories in Newark, Ohio, and Ashton, Rhode Island, fly the Army-Navy "E" flag. Presentation ceremonies for the Army-Navy production award were held at Newark on Friday, November 6. "E" lapel emblems were distributed for every man and woman in the plant.

Presentation of the Army-Navy production award to the men and women of the Aston plant were held on October 22.

ECON-O-COL the "Stronghearted" STOKER

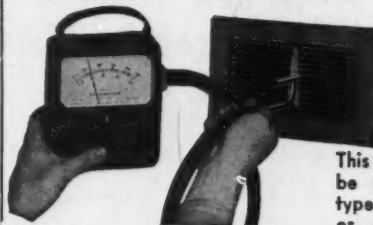
ECON-O-COL
Automatic
COAL BURNER



ECON-O-COL STOKER DIVISION
COTTA TRANSMISSION CORP.
ROCKFORD ILLINOIS

THE SHIELD OF QUALITY

NOW! ACCURATE AIR VELOCITY MEASUREMENTS at INTAKE GRILLES!



This new jet attachment can be added to existing Tube-type Velometers now in use, or can be purchased with

other standard jets and new Velometers. The new intake grille jet is offered only in the spot type since the center reading only has proven to be sufficiently accurate for all commercial purposes. Write for information.



Illinois Testing Laboratories Inc.

412 N. La Salle St., Chicago, Ill.

BB HOOKS & HANGERS



THRU
LEADING
JOBBERS
EVERYWHERE



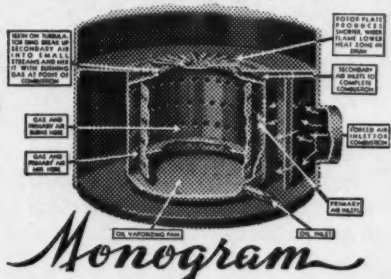
BERGER BROTHERS CO.

Main Office & Factory
229-237 Arch St., Philadelphia, Pa.

Famous Patented MONOGRAM Vaporizing Burner Provides Highest Known Operating Efficiency with Oil

Full Forced
Winter Air
Conditioners

Booster
Gravity
Units



Utility
Room
Units

Automatic
Water
Heaters

The QUINCY STOVE MFG. COMPANY, Quincy, Illinois

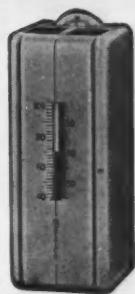
RUGGED CONSTRUCTION SIMPLE OPERATION

MASTER HEAT REGULATOR

TYPE A-23 Positive snap action—operates quietly, surely and safely.

WHITE MFG. CO.

2368 University Ave., St. Paul, Minn.



RYERSON CERTIFIED STEELS

10 STRATEGICALLY - LOCATED PLANTS

Principal products include—Alloy Steels, Tool Steels, Stainless Steel, Hot Rolled Bars, Hoops and Bands, Beams and Heavy Structural, Channels, Angles, Tees and Zees, Plates, Sheets, Cold Finished Shafting and Screw Stock, Strip Steel, Flat Wire, Boiler Tubes, Mechanical Tubing, Rivets, Bolts, etc. Write for Stock List. Joseph T. Ryerson & Son, Inc. Plants at: Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City.

Announcement

The New Swartwout NCM Roof Ventilators

will be announced in the January issue of this publication.

Made of non-critical materials, here's a line of ventilators you can sell profitably to any customer on the lower rating priorities. Install on any type of building. Watch for January advertisement.

The Swartwout Company

18615 Euclid Avenue

Cleveland, Ohio

SAL-MO SUPPLY DUCT

The New Non-Metallic Material for constructing Supply and Return Lines for Warm Air Heating and Air Conditioning Systems. Write:

SALL MOUNTAIN COMPANY

176 W. ADAMS ST.

Dept. K

CHICAGO, ILL.

HIGH EFFICIENCY...

LOW POWER COSTS



LARGE, STREAMLINED INLET MEANS MINIMUM
LOSSES DUE TO ENTRANCE FRICTION OR EDDIES

WITH THIS

Sturtevant MILL EXHAUSTER

B. F. STURTEVANT COMPANY
Hyde Park, Boston, Mass.
Branches in Principal Cities

"Designed and Built by the Pioneer"

Your Fuel Conversion Program

(Continued from page 34)

use this type of heater exclusively, but employ oil burners to augment wood and coal stoves, fireplaces, etc.

Since there is little standardization of use for this type of oil heating, it is more difficult to prescribe methods of cutting down on oil consumption. It is here, however, that the widest range of individual initiative is possible. Heating efficiency for space heaters is probably the minimum for all homes. Heat loss is probably greater. For this reason, a large part of any campaign directed at a saving of fuel oil should be directed at the group using space heaters and cooking stoves employing fuel oil.

IV. HOW TO FINANCE FUEL CONSERVATION AND CONVERSION

A. GOOD INVESTMENT—PAY CASH

Fuel conservation methods cost money. In deciding how much should be spent, these factors should be considered:

1. This is a long-term investment which adds to the value of a house and safeguards the family's health and comfort.
2. Part of the investment should come back to the householder in fuel savings.
3. Paying cash is the wisest method of financing this investment. This is one of the few kinds of spending that is patriotic right now.

B. THE FHA PLAN

If it is not possible to pay cash for fuel conservation devices, the FHA Title I Plan can be used to pay for conversion of heating equipment from oil to coal, insulation, storm doors and windows, weather stripping, etc.

Loans up to \$2,500 are available.

1. How to Get a Loan

- a. Any heating or insulation contractor or supplier can help the householder arrange for time-payment terms.
- b. Loans are made by banks, finance, mortgage or insurance companies, savings and loan associations or other FHA-qualified lending institutions. The prospective borrower should apply for a loan to cover the cost of his fuel conservation job.

2. Terms

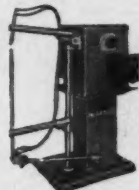
- a. The maximum financing charge is \$5 discount per \$100 per year.
- b. Up to 3 years to pay off the loan. Payments usually are made in equal monthly installments. (Seasonal payments of at least one equal installment annually are permitted for agricultural borrowers.)
- c. If the cost is added to the original mortgage so that payments continue over the life of the mortgage, then certain miscellaneous costs may be charged the borrower: recording or filing fees, title examination costs, hazard insurance premium, etc. The financial institution may also collect the usual "late charge" for installments more than 15 days in arrears.

(Federal Reserve Board Regulation which restricts consumer credit has been waived for loans to make repairs and improvements which conserve fuel.)

AMERICAN ARTISAN

Service Section

WELDING HEADQUARTERS



Electric welding equipment of every description to weld from a watch case to a door. Special or standard SPOT WELDERS from 1/4 to 500 K.V.A. A.C. Arc Welders from 100 to 400 Amps. We invite contract Spot Welding in large or small quantities.

EISLER ENGINEERING CO.

CHAS. EISLER

761 S. 13th St. (Near Ave. Ave.) Newark, N. J.

Trademark

YAGER'S Soldering Salts — Paste Reg.

Two standard fluxes for all soft soldering. Safe, quick, certain. Buy them at your jobbers or write us if he cannot supply you.

1/2 lb., 1 lb., 5 lb. cans; 2 oz., 6 oz., 12 oz.

ALEX. R. BENSON CO., INC., HUDSON, N. Y.

BLOWERS — FANS — EXHAUSTERS

THOROUGHLY REBUILT, for perfect performance. All types; all standard makes. All sizes including the big ones. Hundreds in stock, meeting all requirements. Attractive prices. Fully guaranteed. Expert engineering counsel. **GENERAL BLOWER CO., Engineers, 403 North Peoria Street, Chicago, Illinois.**

**BUY
MORE
WAR BONDS
AND
STAMPS**

Classified

SITUATIONS WANTED

WAR PRODUCTS FABRICATORS

Production Manager, tools and processes, costs, inaugurator of production in any sheet and allied metals war product, with unusual experience in the methods of sub-contracting, will be open for engagement January 1, 1943. Address Key No. 539, American Artisan, 6 N. Michigan Ave., Chicago, Ill.

...Needs No **PRIORITY!**

ALLEN "SILOY" SODER

End your Soder worries now with **SILOY**, the new low tin content wonder soder. Works like magic with most common metals. . . in some cases even better than high tin-content soders.

SEND FOR SAMPLES

. . . Send us detail of your soldering problems—**ALLEN SILOY** can help you solve them.

L. B. ALLEN CO., Inc.

6702 Bryn Mawr Avenue, Chicago

**Have You Something
to Sell?**

or . . .

DO YOU NEED ADDITIONAL EQUIPMENT?

In this day of all-out war effort many plants are seeking equipment that may be standing idle in other shops. If you need equipment, American Artisan classified section will put your desires before the logical people to supply it. If you have something to sell—American Artisan Service Section will put your advertisement before many prospective buyers. In the Warm Air and Air Conditioning Industry American Artisan is "Tops" in reader interest. Your products advertised in these columns will bring many inquiries and result in many sales.

Better for Every Spraying Purpose

MARLEY SPRAY NOZZLES



"Tops" for Air Washing, Humidifying, Brine Spray Lots, etc. Marley nozzles lead all in sales and in profits to you.

*Finer, more uniform spray.

*Effective operation at Low Pressures. *No internal parts to clog or wear.

MARLEY CO., INC. Write for Literature Now! Kansas City, Kansas

SPOT WELDERS CUT COSTS



Ideal for Sheet Metal Shops, Speeds Production, Constant Economical Service.

Floor Type Foot Operated

Write now for full information on our complete line. Quick deliveries.

UNIVERSAL POWER CORP.

4298 Euclid Ave. Cleveland, O.



Save Money, Time and Muscle

Drill Concrete with the "Do-All" Combination Electric Hammer and Drill. Set expansion bolts 10 to 20 times faster than with hand tools. Drills concrete, brick, stone, metal, wood. Easy to maintain. Weighs 15 lbs. Drills to 1 1/2" in concrete. 2400 blows per min. Bulletin 400. Phone Austin 9880. **WODACK ELECTRIC TOOL CORPORATION** 4844 W. Huron St., Chicago, Ill.

AVAILABLE NOW!

BRAKES—HAND & POWER

HAND: 4"10, 6"10, 8"10, 10"10, 12"10, 14"10, 16"10, 18"10, 20"10, 22"10, 24"10, 26"10, 28"10, 30"10, 32"10, 34"10, 36"10, 38"10, 40"10, 42"10, 44"10, 46"10, 48"10, 50"10, 52"10, 54"10, 56"10, 58"10, 60"10, 62"10, 64"10, 66"10, 68"10, 70"10, 72"10, 74"10, 76"10, 78"10, 80"10, 82"10, 84"10, 86"10, 88"10, 90"10, 92"10, 94"10, 96"10, 98"10, 100"10.

BOX AND PAN: 3"14, 4"14, 5"14, 6"14, 7"14, 8"14, 9"14, 10"14, 11"14, 12"14, 13"14, 14"14, 15"14, 16"14, 17"14, 18"14, 19"14, 20"14, 21"14, 22"14, 23"14, 24"14, 25"14, 26"14, 27"14, 28"14, 29"14, 30"14, 31"14, 32"14, 33"14, 34"14, 35"14, 36"14, 37"14, 38"14, 39"14, 40"14, 41"14, 42"14, 43"14, 44"14, 45"14, 46"14, 47"14, 48"14, 49"14, 50"14, 51"14, 52"14, 53"14, 54"14, 55"14, 56"14, 57"14, 58"14, 59"14, 60"14, 61"14, 62"14, 63"14, 64"14, 65"14, 66"14, 67"14, 68"14, 69"14, 70"14, 71"14, 72"14, 73"14, 74"14, 75"14, 76"14, 77"14, 78"14, 79"14, 80"14, 81"14, 82"14, 83"14, 84"14, 85"14, 86"14, 87"14, 88"14, 89"14, 90"14, 91"14, 92"14, 93"14, 94"14, 95"14, 96"14, 97"14, 98"14, 99"14, 100"14.

POWER: 3"10, 4"10, 5"10, 6"10, 7"10, 8"10, 9"10, 10"10, 11"10, 12"10, 13"10, 14"10, 15"10, 16"10, 17"10, 18"10, 19"10, 20"10, 21"10, 22"10, 23"10, 24"10, 25"10, 26"10, 27"10, 28"10, 29"10, 30"10, 31"10, 32"10, 33"10, 34"10, 35"10, 36"10, 37"10, 38"10, 39"10, 40"10, 41"10, 42"10, 43"10, 44"10, 45"10, 46"10, 47"10, 48"10, 49"10, 50"10, 51"10, 52"10, 53"10, 54"10, 55"10, 56"10, 57"10, 58"10, 59"10, 60"10, 61"10, 62"10, 63"10, 64"10, 65"10, 66"10, 67"10, 68"10, 69"10, 70"10, 71"10, 72"10, 73"10, 74"10, 75"10, 76"10, 77"10, 78"10, 79"10, 80"10, 81"10, 82"10, 83"10, 84"10, 85"10, 86"10, 87"10, 88"10, 89"10, 90"10, 91"10, 92"10, 93"10, 94"10, 95"10, 96"10, 97"10, 98"10, 99"10, 100"10.

DRILLS

OHL: 66" 14 ga.; 10" 14 ga.; 5" 14 ga.; 4" 16 ga.

Nos. 255 & 335 D&K; 8" 14 ga. Chicago Steel;

GRINDERS

B.B. & SENSEI Leland Gifford, 7" overhang;

2 Spindle Henry Wright, Allen, & L&G;

4 Spindle Barr B.D.; 8 Spindle P&W. M.D.;

GRINDERS

M.D. FLOOR; 3 & 5 HP. D.C. U.S.;

3 HP. Northern Electric; 5HP. Hansom;

PRESSES OBI

Nos. 1, 2, 3, 4, 5, Elias, Walsh, Consolidated.

Toledo, Rockford, Niagara;

ANGLE: 6x6x1/2" Long & Allstatter;

POWER: 10" 18 ga.; 10" 14 ga.;

WELDERS

BUTT: 35 KVA SWIFT, 5 KVA WINFIELD;

SEAM: 25 KVA THOMSON, 22" arms;

SPOT: AEF—15, 13, 10, 9 1/2 KVA, 220 volt

60 cycle, 14", 15", 16" & 18" throats;

20 KVA ACE, 60 cycle 220 volt, 24" throat;

20 KW THOMSON, 12" thr., 220 v. 60 cycle;

20 KVA WINFIELD, 24" thr., 60 cycle 440 volt;

15 KVA TAYLOR WINFIELD, 220-60; 30" arms;

13 KVA TAYLOR WINFIELD, 220-60; 28" arms;

12 KVA ACME, 60 cycle 220 volt, 23" throat;

10 KVA TOLEDO; 10 KVA AMERICAN;

10 KVA TAYLOR WINFIELD;

7 1/2 KW TAYLOR 10 ga. cap; 15" arms;

3 KW & 6 KW ACE; 13 & 16" Thr.;

WIRE STRAIGHTENERS: 1/2 & 3/4" SHUSTER

NO. 3 NILSON, 3/16" esp.; M.D.

SEND FOR OUR CATALOG 404

INTERSTATE MACHINERY CO., INC. — YARDS 5890

1433 W. PERSHING RD., CHICAGO, ILL.

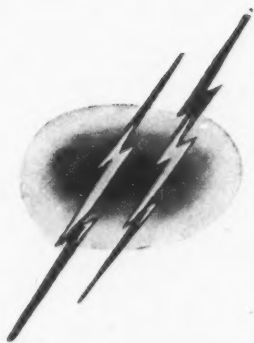
SERVICE SECTION: Rates for display space similar to above in Service Section are \$5.00 per inch per insertion. One-inch minimum space accepted. **Classified Section:** Rates for classified advertising are 5 cents for each word including heading and address. Count seven words for keyed address. Minimum \$1.00 for each insertion. Cash must accompany order.

Index to ADVERTISERS

Accurate Mfg. Works..... *	General Controls	Pacific Airmax Corp..... *
Acme Electric Welder Co..... 81	General Electric Co..... *	Parker-Kalon Corp. 55
Adams Co., The..... 65	Gerett Corp., M. A..... 76	Patten Co., J. V..... *
Aerofin Corp. 9	Gillen Co., J. L..... 82	Payne Furnace & Supply Co..... 80
Air Control Products, Inc..... *	Grant Wilson, Inc..... 14	Peerless Electric Co., The..... *
Air-Maze Corp. *		Peerless Foundry Co..... 76
Airtemp Division, Chrysler Corp..... *	Harrington & King Perforating Co... 74	Penn Electric Switch Co..... 10
Airtherm Mfg. Co..... *	Hart & Cooley Mfg. Co..... 72 and 73	Perfex Corp. 6 and 7
Allen Co., Inc., L. B..... 85	Hart & Grouse Corp..... *	Premier Furnace Co..... *
Allen Corp. *	Heil Co. 80	
American Air Filter Co., Inc..... *	Henry Furnace & Foundry Co., The.. *	Quincy Stove Mfg. Co..... 83
American Blower Corp..... *	Herco Oil Burner Corp..... *	
American Brass Co..... 8	Heremetal Co., The..... *	Randall Graphite Products Corp..... 77
American Coolair Corp..... *	Hess Warming & Ventilating Co..... *	Register & Grille Mfg. Co..... 80
American Hotel Association..... *	Hussey & Co., C. G..... *	Republic Steel Corp..... 12 and 13
American Radiator & Standard Sanitary Corp. *		Research Products Corp..... 70
American Rolling Mill Co., The..... *	Ilg Electric Ventilating Co..... *	Rock Island Register Co..... *
Armstrong Company, The..... 67	Illinois Testing Laboratories, Inc..... 83	Round Oak Co. *
Auer Register Co..... 3	Independent Register Co., The..... *	Rybolt Heater Co..... 18
Automatic Humidifier Co..... 81	International Heater Co..... *	Ryerson & Son, Inc., Joseph T..... 84
Automatic Products Co..... *	International Nickel Co., Inc..... 5	
	Interstate Machinery Co..... 85	Sall Mountain Co..... 84
Barber Gas Burner Co., The..... 78	Johnson Co., S. T..... *	Schwitzer-Cummins Co. 74
Bard Mfg. Co..... *		Scovill Mfg. Co. *
Bayley Blower Co..... 80	Lafayette Hotel	Scully Steel Products Co..... 46
Benson Co., Inc., Alex R..... 85	Lamneck Products, Inc..... *	Skilsaw, Inc. *
Berger Bros. Co..... 83Inside Front Cover	Southwest Hotels
Bethlehem Steel Co..... 15	Lau Blower Co..... *	Standard Stamping & Perforating Co. 76
Beverly Shear Co..... 79	Leader Iron Works, Inc..... 79	Stanley Electric Tool Div., The
Black & Decker Mfg. Co..... 80	Libert Machine Co..... *	Stanley Works
Blocksom & Co..... 81	Lincoln Electric Co..... *	Sturtevant Co., B. F..... 84
Brauer Supply Co., A. G..... 81	Little Burner Co., Inc., H. C..... *	Superior Sheet Steel Co..... *
Bremil Mfg. Co..... 80	Lockformer Co. 69	Swarthout Co. 84
Burt Mfg. Co..... 71		Syncromatic Air Conditioning Corp... 82
	Maple City Stamping Co..... *	
Carnegie-Illinois Steel Corp..... 46	Marley Co., The..... 85	Torrington Mfg. Co..... *
Century Electric Co..... *	Marshalltown Mfg. Co..... *	Tuttle & Bailey, Inc..... 11
.....Outside Back Cover	May-Fiebeger Co..... 72	
Cheney Metal Products Co..... 78	May Oil Burner Co..... *	U. S. Air Conditioning Corp..... *
Chicago Filter Co..... 80	McDonnell & Miller..... *	United States Gypsum Co..... *
Clarage Fan Co..... 75	Mercoird Corp., The..... 82	U. S. Register Co..... *
Cole Hot Blast Co..... *	Meyer & Bro. Co., F..... *	U. S. Steel Corp..... 46
Conco Corp. 82	Meyer Furnace Co..... *	Universal Power Corp..... 85
Condensation Engineering Corp..... 71	Milcor Steel Co..... *	Utility Fan Corp..... *
Cotta Transmission Corp..... 83	Minneapolis-Honeywell Regulator Co.	
Crescent Tool Co..... 17Inside Back Cover	Victor Electric Products, Inc..... *
	Mitchell & Smith, Inc..... 28	
Dewitt Hotels	Monmouth Products Co..... *	Wagner Electric Corp..... *
Densewood Corporation	Morency-Van Buren Div., Scovill	Ward Machinery Co..... *
Diamond Mfg. Co..... *	Mfg. Co. *	Waterloo Register Co..... *
Diamond Roofing & Metal Works.... *	Morrison Steel Products, Inc..... *	Waterman-Waterbury Co., The..... *
Dreis & Krump Mfg. Co..... 80	Morrison Products, Inc..... *	Weirton Steel Co..... *
	Mt. Vernon Furnace & Mfg. Co..... *	Westinghouse Electric & Mfg. Co.... *
Eisler Engineering Co..... 85	Mueller Furnace Co., L. J..... *	White Mfg. Co..... 83
Elgo Shutter & Mfg. Co..... *		White-Rodgers Electric Co..... *
Evans Machine Co., L. R..... *	National Super Service Co..... *	Wise Furnace Co..... *
	Niagara Machine & Tools Works.... 63	Whitney Mfg. Co., W. A..... 75
Field Control Division..... 68	Norge Heating & Conditioning Div.,	Whitney Metal Tool Co..... 79
Fireline Stove & Furnace Lining Co.. *	Borg-Warner Corp..... *	Williams Oil-O-Matic Heating Corp... *
Fitzgibbons Boiler Co., Inc..... *	Northwestern Stove Repair Co..... *	Williamson Heater Co..... 78
Forest City Foundries Co..... *		Wilson, Inc., Grant..... 14
Frederick Iron & Steel Co..... *	Olsen Mfg. Co., C. A..... 39	Wiss & Sons Co., J..... 82
Front Rank Furnace Co..... *	Osborn Co., J. M. & L. A..... 64	Wodack Electric Tool Corp..... 85
	Owens-Corning Fiberglas Co..... 61	Wood Industries, Inc., Gar..... 77
Gehl Bros. Mfg. Co..... *		
General Blower Co..... 85		Zink Co., John 66

Firms represented in this issue are identified by the folio of the page on which their advertising appears. Advertising which appears in other issues is marked with an asterisk.

M-H *Miracles* WITH ELECTRONICS



ELECTRONICS bids fair to revolutionize our every day living after the war. When Minneapolis-Honeywell placed its fifty year experience and manufacturing resources at the call of our government, the results of several years of research in electronics were immediately applied to controls and devices for war . . . Extending this peacetime

experience to the techniques of war will bear fruit, when Peace comes, in startling new developments in the electronic control of automatic heating and manufacturing processes. Minneapolis-Honeywell Regulator Co., 2726 Fourth Ave. S., Minneapolis, Minn. In Canada: Toronto, Ontario. In Europe: London, England, and Stockholm, Sweden.

Listen "Alias JOHN FREEDOM" ★ Blue Network Coast to Coast every Monday, 10:15 to 10:45 P. M., E. W. T.; or see your local newspaper ★ "The Most Dramatic Show on the Air"

Instruments by **BROWN** *and Controls by*
MINNEAPOLIS-HONEYWELL

Because Your Motors May Have to Serve for the Duration

Send for

**These New Century Bulletins on
Proper Motor INSTALLATION,
CARE, and ADJUSTMENT**



**Whenever Possible—
Order Standard
Motors**

Constant speed, continuous duty, open rated 40° C. sleeve bearing, 60 cycle, 3-phase motors are produced in larger quantities than other types and therefore can usually be shipped faster.



To help all Century Motor users get longer life from motors now in service, Century offers, free, the following helpful, informative bulletins on motor Care — Installation — Adjustment:

Squirrel Cage Polyphase Motors,
1/6 to 400 HP

Integral HP Direct Current Motors

Fractional HP Direct Current Motors

Direct Current Generators

Repulsion Start Induction Motors

Capacitor Motors — Fractional HP

Split Phase Motors

Because all Century Motors and Generators now being produced must go to the War Effort, proper motor care and protection is now more essential than ever before. Century Motors are working 'round the clock, often on continuous, 24-hour production — three times normal peace-time use.

To get the most out of your Century Motors, to assure longest, most economical operating life, ask your Century Application and Service Engineer for copies of these new Bulletins, or write direct today.

CENTURY ELECTRIC COMPANY

1806 Pine Street

St. Louis, Missouri

One of the Largest EXCLUSIVE Motor and Generator Manufacturers in the World. — Offices and Stock Points in Principal Cities.

300

CENTURY ELECTRIC COMPANY — 1806 Pine Street - St. Louis, Mo.

Please send me "Installation—Care—Adjustment" booklets on the following types of Century Motors:

- | | |
|--|---|
| <input type="checkbox"/> Split Phase | <input type="checkbox"/> Direct Current Motors |
| <input type="checkbox"/> Repulsion Start Induction | <input type="checkbox"/> Generators—Alternating Current |
| <input type="checkbox"/> Capacitor | |
| <input type="checkbox"/> Squirrel Cage | <input type="checkbox"/> Generators—Direct Current |

Name.....

Company.....

Address.....

City..... State.....

**Century
MOTORS**

l
v
d
s

t
e